United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Phoenix District
Hassayampa Field Office
21605 North 7th Avenue
Phoenix, Arizona 85027
www.blm.gov/az/

In Reply Refer To:
1610 (P010)
AZA-35079

Dear Reader:

Enclosed is the Final Environmental Impact Statement (EIS) entitled: *APS Sun Valley to Morgan 500/230kV Transmission Line Project Final Environmental Impact Statement and Proposed Bradshaw-Harquahala Resource Management Plan Amendment.* This document has been developed in accordance with the National Environmental Policy Act of 1969 and the Federal Land Policy and Management Act of 1976, as amended. The Bureau of Land Management (BLM) prepared this document in consultation with several cooperating agencies, including the United States (U.S.) Air Force - Luke Air Force Base, the U.S. Environmental Protection Agency (EPA), Arizona State Land Department (ASLD), the Maricopa Association of Governments, and the cities of Peoria and Surprise, Arizona. The BLM also took into account public comments received during the scoping effort and in response to the Draft EIS/Draft Resource Management Plan (RMP) Amendment, which was published in November 2012. The Final EIS/Proposed RMP Amendment is open for a 30-day availability period beginning the date the EPA publishes the Notice of Availability (NOA) for the Final EIS/Proposed RMP Amendment in the *Federal Register.*

The Final EIS/Proposed RMP Amendment has been prepared to analyze the potential impacts of granting a right-of-way to Arizona Public Service (APS) for the purpose of constructing and operating a 500/230-kilovolt (kV) overhead transmission line from the Sun Valley Substation to the Morgan Substation. The Proposed Sun Valley to Morgan 500/230-kV Transmission Line Project (Project) would be located on a combination of BLM-managed public lands, Arizona State Trust lands, and private lands in northern Maricopa County, northwest of Phoenix, Arizona. The Project is an approximately 38-mile-long overhead transmission line on monopole structures with a 200-foot right-of-way (ROW) that would head out of the Sun Valley Substation in the northwest portion of the Town of Buckeye to the Morgan Substation in the Town of Peoria, within an area certificated for the Project by the Arizona Corporation Commission (ACC). The BLM-managed public lands within the Project area are managed under the existing Bradshaw-Harquahala RMP. Under the Proposed Action, the RMP would need to be amended to establish a utility corridor and change the Visual Resource Management (VRM) Class designation for BLM-managed public lands that would be crossed by the proposed route.

In addition to the Proposed Action (as described above), the Final EIS/Proposed RMP Amendment analyzed three Action Alternatives including: Alternative 1: Proposed Action with Additional Corridor; Alternative 2: Right-of-Way South of State Route 74; and Alternative 3: Carefree Highway Route. A Sub-Alternative proposed by the ASLD is also being analyzed. Alternative 2, Alternative 3, and the Sub-Alternative routes do not subscribe to the route certificated by the ACC for the Project. This document also analyzed a No Action alternative under which the BLM would not issue a ROW; the Bradshaw-Harquahala RMP would not be amended; and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. The APS is committed to construction of the transmission line and could pursue other options to develop the Project without using public lands. However, it should be noted that implementation of the Project following a route other than the certificated route (the Proposed Action route) could only occur if the ACC amended the certificate that has been issued for this Project.

The public was provided a 45-day scoping period at the beginning of the EIS/RMP Amendment process to identify potential issues and concerns associated with the Proposed Action. Scoping comments were used to help develop the alternatives to the Proposed Action, to guide the analysis of potential effects from the Project, and to identify potential mitigations for inclusion in the Draft EIS/Draft RMP Amendment. A NOA for the Draft EIS/Draft RMP Amendment was published in the *Federal Register* on November 9, 2012. Publication of the NOA initiated a 90-day formal public and agency comment period. Three public hearings were held in Peoria, Wittmann, and Phoenix, Arizona on December 11, 12, and 13, 2012, respectively. The purpose of these hearings was to provide information on the Project and to collect public comment on the adequacy and accuracy of the analysis in the Draft EIS. Comments were accepted through February 8, 2013, for use in development of this Final EIS.

The BLM has identified the Proposed Action route crossing BLM-managed public lands as the Agency Preferred Alternative route for the proposed transmission line, including best management practices and mitigation measures, with modifications as necessary. Modifications could consist of minor route deviations for micrositing of structures or segments of the line at the time of route engineering to minimize impacts to visual and other sensitive resources, as indicated in the mitigation measures. However, all potential modifications would still allow for the transmission line route to remain within the ACC-certificated route on public lands.

Under the Agency Preferred Alternative, the BLM would approve a 200-foot-wide ROW within the existing designated utility corridor northeast of the Sun Valley Substation. In addition, the BLM would amend the RMP to:

- Designate a 200-foot-wide single-use utility corridor on BLM-managed public lands north of State Route (SR) 74 and eliminate Decision LR-30;
- Designate a multiuse utility corridor on 1,013 acres of BLM-managed public lands south of SR 74 to address potential future BLM management considerations; and,
- Change the existing VRM Class designations of 2,362 acres north of SR 74 and 1,013 acres south of SR 74 from Class III to Class IV to allow for the newly established utility corridors.

The Final EIS/Proposed RMP Amendment is being released to inform the public and interested parties of potential impacts associated with implementing APS's proposal, as well as alternatives identified by the agencies. The Final EIS/Proposed RMP Amendment is not a decision document. Rather, it is a document that will inform the BLM's final decisions on whether to amend the RMP and whether to issue a ROW grant. The BLM will only be issuing decisions on those portions of the APS request that involve a ROW on public lands; however, the Final EIS/Proposed RMP Amendment will also inform other regulatory agencies, from which permits would be required.

Publication of an NOA for a Final EIS does not trigger a formal public comment period. The BLM, however, may choose to review any comments submitted following the publication of the NOA for a Final EIS and use them to inform the agency's records of decision (ROD). Those individuals wishing to submit comments are asked to do so in writing and submit electronically to the Project at SunValley-Morgan@blm.gov. Please include "Sun Valley to Morgan Final EIS/Proposed RMP Amendment in the subject line of your email message. Comments may also be submitted by mail to: Proposed APS Sun Valley to Morgan Project, Attention: Joe Incardine, BLM National Project Manager, Phoenix District Office, 21605 North 7th Avenue, Phoenix, Arizona 85027-2929.

Pursuant to the BLM's planning regulations at 43 CFR 1610.5-2, any person who participated in the land use planning process for the Proposed RMP Amendment and has an interest that is or may be adversely affected by the planning decisions may protest approval of the planning decisions within 30 days from the date the EPA published the NOA in the *Federal Register*. The regulations specify the required elements of a protest. The protest may raise only those issues that were submitted for the record during the land use planning process, and the protest must be in writing and filed with the BLM Director. For further information on filing a protest, please see the accompanying protest regulations (Enclosure). Take care to document all relevant facts and, as much as possible, reference or cite the planning documents or available planning records (e.g. meeting minutes or summaries, correspondence, etc.).

Emailed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular or overnight mail postmarked by the close of the protest period. Under these conditions, the BLM will consider the emailed protest as an advance copy and will afford it full consideration. If you wish to provide the BLM with such advance notification, please direct email protests to the attention of Brenda Hudgens-Williams, BLM protest coordinator, at bhudgens@blm.gov.

All protests, including the followup letter to emails, must be in writing and mailed to one of the following addresses:

Regular Mail:	Overnight Mail:
BLM Director (210)	BLM Director (210)
Attn: Brenda Hudgens-Williams	Attn: Brenda Hudgens-Williams
P.O. Box 71383	20 M Street SE, Room 2134 LM
Washington, D.C. 20024-1383	Washington, D.C. 20003

Before including your address, phone number, email address, or other personal identifying information with your comments, be advised that your entire comment, including your personal identifying information, may be made publicly available at any time. Although you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

The BLM Director will make every attempt to promptly render a decision on each protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior. Responses to protest issues will be compiled and formalized in a Director's Protest Resolution Report made available following issuance of the decisions. Upon resolution of all land use plan protests, the BLM will issue the APS Sun Valley to Morgan 500/230-kV Transmission Line Project Final Environmental Impact Statement, and Proposed Bradshaw-Harquahala Resource Management Plan Amendment ROD and Approved RMP Amendment.

Printed copies of the Final EIS/Proposed RMP Amendment are available for review at the Hassayampa Field Office and the Arizona State Office. The document may also be viewed at public libraries in Maricopa County, Arizona.

- City of Peoria Public Library, 8463 West Monroe Street, Peoria, Arizona 85345
- Sunrise Mountain Public Library, 21109 North 98th Avenue, Peoria, Arizona 85382
- Northwest Regional Library, 16089 North Bullard Avenue, Surprise, Arizona 85374
- Phoenix Public Library, Burton Barr Central Library, 1221 North Central Avenue, Phoenix, Arizona 85004

You may also access the document on the Internet at:
http://www.blm.gov/az/st/en/prog/energy/aps-sunvalley.html

Sincerely,

Rem Hawes
Field Manager

Raymond Suazo
State Director

Enclosure

Protest Regulations

[CITE: 43CFR1610.5-2]

TITLE 43—PUBLIC LANDS: INTERIOR
CHAPTER 11—BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR
PART 1600—PLANNING, PROGRAMMING, BUDGETING—Table of Contents
Subpart 1610—Resource Management Planning
Sec. 1610.5-2 Protest procedures.

(a) Any person who participated in the planning process and has an interest which is or may be adversely affected by the approval or amendment of a resource management plan may protest such approval or amendment. A protest may raise only those issues which were submitted for the record during the planning process.

(1) The protest shall be in writing and shall be filed with the Director. The protest shall be filed within 30 days of the date of the Environmental Protection Agency published the notice of receipt of the final environmental impact statement containing the plan or amendment in the Federal Register. For an amendment not requiring the preparation of an environmental impact statement, the protest shall be filed within 30 days of the publication of the notice of its effective date.

(2) The protest shall contain:

- **(i) The name, mailing address, telephone number and interest of the person filing the protest;**
- **(ii) A statement of the issue of issues being protested;**
- **(iii) A statement of the part or parts of the plan or amendment being protested;**
- **(iv) A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and**
- **(v) A concise statement explaining why the State Director's decision is believed to be wrong.**

(3) The Director shall promptly render a decision on the protest

(b) The decision shall be in writing and shall set forth the reasons for the decision. The decision shall be sent to the protesting party by certified mail, return receipt requested. The decision of the Director shall be the final decision of the Department of the Interior.

APS Sun Valley to Morgan 500/230kV Transmission Line Project

Final Environmental Impact Statement and Proposed Resource Management Plan Amendment

June 2013

BLM

Final Environmental Impact Statement
for the Proposed APS Sun Valley to Morgan 500/230kV
Transmission Line Project and
Proposed Resource Management Plan Amendment

( ) Draft **(X) Final**

Lead Agency:	U.S. Department of the Interior Bureau of Land Management Hassayampa Field Office
Cooperating Agencies:	U.S. Air Force - Luke Air Force Base, U.S. Environmental Protection Agency, Arizona State Land Department, Maricopa Association of Governments, City of Peoria, and the City of Surprise
Counties Directly Affected:	Maricopa County, Arizona
Date FEIS Filed with EPA:	Same as date of publication in the *Federal Register*
Comments on the FEIS can be Directed to:	Joe Incardine BLM Phoenix District Office Hassayampa Field Office 21605 North 7th Avenue Phoenix, Arizona 85027 SunValley-Morgan@blm.gov
Comments must be received by:	30 days after publication in the *Federal Register*

Authorized Officers Responsible for the Environmental Impact Statement:

Rem Hawes
Field Manager

Raymond Suazo
State Director

EXECUTIVE SUMMARY

ES.1 PREFACE

This Final Environmental Impact Statement (EIS) reflects revisions to the Draft EIS based on public comments received during the public comment period (see **Section ES.12**). A vertical line in the margin indicates where text additions were made in response to comments. Text additions are indicated with an underline.

ES.2 INTRODUCTION

The Department of the Interior Bureau of Land Management (BLM) Hassayampa Field Office has received an application from Arizona Public Service (APS or Applicant) to construct, operate, maintain, and decommission a 500 kilovolt (kV)/230kV overhead transmission line from the Sun Valley Substation to the Morgan Substation (Project). The Project would be located on a combination of BLM, State Trust, and private lands in northern Maricopa County, northwest of Phoenix, Arizona. Generally the transmission line would head out of the Sun Valley Substation in the northwest portion of the Town of Buckeye to the Morgan Substation in the Town of Peoria.

APS' proposed Project would be an approximately 38-mile long overhead transmission line on monopole structures within a 200-foot wide right-of-way (ROW) that would be within an area certificated for the Project by the Arizona Corporation Commission (ACC). The Project would require a new ROWs or easement on federal, state, and private lands. The construction ROW would be approximately 200 feet wide, but could be somewhat wider where terrain poses engineering or construction constraints. The permanent and operational ROW width is proposed to be 200 feet wide and would cross approximately seven miles of BLM-managed public lands, north and south of SR 74 in the northeastern part of the Project Area and approximately two miles of public lands in the southwestern portion of the Project Area near the Sun Valley Substation location. Because the ROW over public lands is needed to complete APS' proposed Project, which spans approximately 38 miles on mostly non-public lands, the National Environmental Policy Act of 1969 (NEPA) requires analysis of the entire transmission line route, including impacts to non-public lands. However, any decision issued by the BLM would only affect that portion of the Project occurring on BLM-managed public lands. In addition to the proposed location of the Project, referred to as the Proposed Action route throughout the document, three Action Alternative routes and one Sub-alternative route were also considered.

As part of its responsibilities under NEPA, the BLM must consider a reasonable range of alternatives. The BLM is the lead federal agency responsible for preparation of this EIS. The BLM Arizona State Office and the Hassayampa Field Office have determined that the proposed Project constitutes a major federal action that requires the preparation of an EIS in accordance with NEPA, as amended. This Draft EIS was prepared in accordance with NEPA, and is intended to provide the public and decision makers with an opportunity to review and comment on a complete and objective evaluation of impacts that would occur from the Proposed Action, the Action Alternatives, and the No Action Alternative.

The BLM lands within the Project Area are managed under the existing Bradshaw-Harquahala Resource Management Plan (RMP). Under the Proposed Action, an amendment to the 2010 Bradshaw-Harquahala RMP would be necessary because a utility corridor for the proposed ROW on public land within the certificated route approved by the ACC along SR 74 was not established and high-voltage transmission lines crossing public land are required to be within designated utility corridors under the current RMP. In addition, the Visual Resource Management (VRM) Class designation would need to be amended from VRM Class III to VRM Class IV for those public lands where views would be dominated by the transmission line, and thus would not meet the current VRM objectives.

ES.3 SUMMARY OF PROJECT HISTORY

In order to proceed with the steps to fulfill the identified need for added electric transmission capacity, APS initiated the applicable processes with the ACC. After review of the APS Application for a Certificate of Environmental Compatibility, the ACC Line Siting Committee recommended a route that was "certificated" by the ACC, portions of which were designed to avoid private property interests. This was the route that the ACC directed APS to follow for the Sun Valley to Morgan transmission line project, thus APS filed a ROW Application for Transportation and Utility Systems and Facilities on Federal Lands (SF-299) with the BLM to construct a 500/230kV transmission line within the ACC-certificated route. The route certificated by the ACC and requested by APS in their ROW application was not the original APS preferred route in its entirety, but was a blend of their preferred route and portions of their proposed alternative routes. This route was not in conformance with the BLM's Phoenix RMP, which was in force at the time the ROW application was submitted; nor was it in conformance with the Bradshaw-Harquahala RMP, which was in force when the BLM rendered a decision on the APS ROW application. The APS ROW application was initially rejected for nonconformance with the RMP; however, the BLM ultimately agreed to consider an RMP amendment (RMPA) and process the ROW application.

ES.4 BLM'S PURPOSE AND NEED

The BLM's purpose and need for this action is to respond to APS's application under Title V of the Federal Land Policy and Management Act of 1976 for a ROW grant to construct, operate, maintain, and decommission a transmission line and ancillary facilities in compliance with the Federal Land Policy and Management Act, BLM ROW regulations, and other applicable federal laws. The BLM will decide whether to amend the Bradshaw-Harquahala RMP, and whether to approve, deny, approve the APS ROW application with modifications, or select another alternative. The BLM would only be issuing decisions on those portions of the APS request that involve a ROW on public lands.

ES.4.1 Purpose of the Action

Specifically, the BLM's purposes are as follows:

- To implement the Federal Land Policy and Management Act and the Bradshaw-Harquahala RMP by providing consistent land-management decisions based on the standards set forth by both authorities.

- To meet public needs for use authorizations such as ROWs, permits, leases, and easements, while avoiding or minimizing adverse impacts to other resource values and locating the uses in conformance with land-use plans.
- To process the ROW application submitted by APS to connect a 500kV/230kV transmission line from the Sun Valley to Morgan Substations in an expeditious manner.

ES.4.2 Need for the Action

The need for the BLM action is established by the BLM's responsibility under the Federal Land Policy and Management Act to respond to a request for a ROW grant while avoiding or minimizing adverse impacts to other resource values and locating the uses in conformance with land-use plans. The Federal Land Policy and Management Act also requires that the BLM "develop, maintain, and when appropriate, revise land-use plans."

ES.5 THE EIS DECISION FRAMEWORK

The RMP amendment and EIS processes will inform two decisions to be made by the BLM. First, BLM will decide whether or not to amend the Bradshaw-Harquahala RMP, as necessary, for the proposed route on public land north and south of SR 74 to: a) include a single-use, utility corridor on public lands that would support a 500/230kV transmission line between the Sun Valley and Morgan Substations, or b) include a multiuse utility corridor that would contain the requested 200-foot wide ROW; and c) change the VRM Class from VRM Class III to VRM Class IV, as necessary, for the area affected by the corridor. Second, BLM will decide whether or not to approve, deny, or approve the APS ROW application with modifications, or select another alternative.

ES.6 PUBLIC INVOLVEMENT

ES.6.1 Public Scoping

The BLM has taken a variety of steps to inform the public, special interest groups, and local, state, and federal agencies about the Proposed Action and Action Alternatives for the Project, and to solicit feedback from these interested parties to help shape the Project's scope and alternatives.

The BLM conducted internal agency and public scoping to solicit input and identify the environmental and social concerns and issues associated with the Project. A Notice of Intent was published in the *Federal Register* on April 11, 2011. Publication of the Notice of Intent initiated a 45-day formal public and agency scoping period, during which the BLM solicited comments regarding the Project and its potential impacts. The BLM prepared scoping information materials and provided copies to federal, state, and local agencies; Native American tribes; and members of the general public. Information regarding upcoming meetings and opportunities for comment was published in various local news media. The BLM conducted open house public scoping meetings to disseminate information, answer questions, and solicit comments on April 26, 2011, in Phoenix, Arizona; on April 27, 2011, in Wittmann, Arizona; and on April 28, 2011, in Peoria, Arizona. In addition to the public scoping, on June 8, 2011, an Economic Strategies Workshop was also conducted for this

Project to comply with the BLM's Land Use Planning Handbook during the EIS and Land Use Plan Amendment process. The purpose of the workshop was to identify to BLM, potential management opportunities that further the social and economic goals of area communities. The BLM also provided opportunities for comments to be submitted through the United States mail and via email.

ES.6.2 Issues Identified

In addition to the comments received from the external scoping process, internal scoping identified either similar issues or additional issues covered in this Draft EIS and Draft RMPA. These issues were identified and addressed in data collection methodologies and baseline reports that are included in the Project Record and are incorporated into the appropriate sections of this Draft EIS and Draft RMPA. The nine issues identified from internal and external scoping are summarized below.

Issue 1: Need and Reliability

The analysis should evaluate the need for increased capacity and reliability of power infrastructure in the Phoenix metropolitan area. Project Area lands were a significant part of the Lake Pleasant Resource Conservation Area. The value of the lands for conservation versus the need for the project needs to be analyzed.

Issue 2: Process, RMP Amendment, and Policy

The Proposed Action route was approved by the ACC. Should any of the Action Alternative routes be selected, they would need ACC approval. The analysis should consider potential delay of the transmission line construction process due to any additional ACC approval requirements once the NEPA process is completed. The Project components north of SR 74 would require an amendment of the Bradshaw-Harquahala RMP. This process should consider the resource impacts of an amendment of the RMP; the appropriateness of amending the RMP in such a way that would benefit developers; and the flexibility of the RMP to address present and future planning needs.

The analysis should evaluate applicability of the BLM policy of co-locating transportation and utility corridors to the Project. The analysis should discuss applicability of federal and state policies regarding joint use corridors.

Issue 3: Project Design Features, Mitigation Measures, and Alternatives

Fencing to protect tortoises should be installed and access roads should be designed to minimize impacts to habitat. The distances between the transmission line and surface water in relation to water quality should be considered; for example, the impacts to public drinking water supplies if transmission lines or other components fall into the river or the Central Arizona Project canal. The alternative of constructing the transmission line underground needs to be evaluated, specifically routing under the Luke AFB auxiliary field. The alternative of aligning the transmission line route along the Central Arizona Project canal needs to be evaluated.

The placement of the Project in or near subdivisions should be avoided. The alternative of placing the transmission line in the Westwing Corridor needs to be evaluated. The analysis

needs to include compatibility of routes crossing non-BLM lands with approved land plans south of SR 74.

Issue 4: Air and Climate

The Project would involve ground disturbance that may affect air quality in a designated nonattainment area.

Issue 5: Biological Resources

The construction and operation of Project components could have an impact on wildlife and their habitats. North of SR 74, the Project could be within sensitive habitat or habitat for special status species. The area is already designated for approved off-road vehicles and grazing. Additional access to this area could lead to further habitat degradation.

The construction and operation of Project components could impact bird and bat habitat. Implementation of the latest guidelines for avian and bat protection will be critical to protection of these species.

The construction of Project components in proximity to the Agua Fria River and associated riparian vegetation could impact these resources.

Issue 6: Health and Safety

Electromagnetic fields are thought to contribute to human health concerns. Existing and planned residences would be in proximity to the Proposed Action transmission line route south of SR 74, and thus potentially exposed to electromagnetic fields.

Lightning strikes to electric transmission facilities and other weather events can cause fires. The Project components that would be in proximity to the Thunder Ridge Airpark could impact that facility.

Issue 7: Recreation

The Project may impact visual and recreation resources in the Hieroglyphic Mountains Recreation Area, Castle Hot Springs Special Recreation Management Area, and The Boulders Off Highway Vehicle (OHV) Staging Area. The construction disturbance may impact OHV trails. The analysis should evaluate the cost and effectiveness of rehabilitating construction disturbance in OHV areas (de facto creation of new roads/routes that could not be prevented or rehabilitated).

The Project would create access to currently undisturbed lands. The analysis should evaluate protection of recreational resources identified in the Bradshaw-Harquahala RMP. The analysis should evaluate the cumulative impacts of this Project on OHV multiuse trails state-wide in conjunction with renewable energy projects.

Issue 8: Socioeconomics

The analysis should evaluate the direct, indirect, and cumulative impacts of the proposed Project on area property values, considering the already weakened housing market. The analysis should assess the impact of the Project on area property values resulting in reduced tax revenues, and this impact on state and local budgets and school funding, preventing economic growth and recovery. The analysis should evaluate compensation for homes taken as a result of the proposed Project.

The analysis should evaluate potential adverse impacts to socioeconomics of the recreation industry in Arizona. The land north of SR 74 (which includes BLM-managed lands) is used by a variety of recreational users, including OHV riders and hikers. Assess the potential for closure of existing trails and access points and the impacts to recreation in the area. The analysis should include potential impacts on the social and non-monetary values associated with recreation, such as community cohesion. This might also include the value of ecosystem services, which are goods and services provided by nature that bring value to human life, but generally lack market prices.

The analysis should evaluate the potential beneficial impacts to socioeconomics through local job creation, income generation, and development of renewable energy generation sites. The analysis should address the potential cumulative impacts from the increased capacity on future projects including renewable energy. The analysis should evaluate the environmental justice aspects of the proposed project.

Issue 9: Scenic/Visual

The Project would impact scenic views along the SR 74 corridor. The analysis should evaluate the short-term visual impact to travelers on SR 74 versus long-term visual impact to area residents who would view the Project all the time and consider this affecting their quality of life in terms of social considerations. The analysis should consider the quality of the lands north of SR 74 for conservation management by the BLM as opposed to expanded development into BLM lands. The analysis should revisit the major Bradshaw-Harquahala RMP issue of visual vistas associated with the Hieroglyphic Mountains and southern Bradshaws. The analysis should consider precedence for co-locating power lines and roads.

ES.7 ALTERNATIVES

In addition to the Proposed Action and No Action Alternative, three Action Alternative routes and one Sub-alternative route are considered in detail in this EIS: Alternative 1: Proposed Action Route with Additional Corridor; Alternative 2: Route South of SR 74; Alternative 3: Carefree Highway Route; and Sub-alternative: State Trust Land Route Variation. The Action Alternatives have segments outside the ACC-certificated route. Implementation of those routes could only occur if the ACC amended the CEC that has been issued for the Project. The ACC's consideration of amending the CEC would open the entire route decision up for review and consideration, and would not be limited to discrete portions; a process that could conceivably be as lengthy and involved as the consideration of the original ACC application filed by APS. As a result, construction of the 500kV transmission line would be delayed by approximately one to three years (depending on whether the route would be a modification to an existing alternative or a new alternative route), and potentially the 230kV line as well, depending on the length of the ACC amendment process. These alternatives are briefly described below and described more fully in **Chapter 2**.

ES.7.1 Proposed Action

From the Sun Valley Substation, the proposed route follows the Central Arizona Project canal for approximately three miles, portions of which would be within an existing BLM designated utility corridor, to approximately the 275th Avenue alignment. The route then turns northwest for approximately two miles following an existing 500kV transmission line.

At the Happy Valley Road alignment, the route turns north for approximately 4.5 miles, then east for approximately five miles paralleling the Lone Mountain Road alignment to the north. The proposed route then turns north following 235th Avenue for approximately 3.5 miles then east following the Joy Ranch Road alignment, for approximately seven miles until it approaches SR 74. The proposed route parallels the south side of SR 74 for approximately two miles before crossing and paralleling SR 74 to the north on BLM-managed public land for approximately five miles. The route again crosses SR 74 to parallel the south side of the highway for approximately three miles, crossing the Agua Fria River. The route then turns south for one mile, and turns east for less than one mile following the Cloud Road alignment to connect to the Morgan Substation.

Under the Proposed Action, the Bradshaw-Harquahala RMP would be amended to establish the needed 200-foot wide ROW as a single-use utility corridor on public lands along SR 74 and the VRM Class changed from VRM Class III to VRM Class IV within the transportation corridor on public lands north of SR 74 and within the entire key-shaped block of public lands south of SR 74.

ES.7.2 Alternative 1: Proposed Action with Additional Corridor

Alternative 1 was developed to evaluate the establishment of a multiuse utility corridor as opposed to a single-use utility corridor as described under the Proposed Action. Under this alternative, the route of the proposed transmission line between the Sun Valley and Morgan Substations would be the same as the Proposed Action route. However, a multiuse utility corridor would also be established on BLM-managed public lands that would begin at the centerline of SR 74 and extend 0.5-mile north, and also include the entire key-shaped block of BLM lands south of SR 74. The Bradshaw-Harquahala RMP would also be amended to change the entire area contained within the multiuse utility corridor from VRM Class III to VRM Class IV.

ES.7.3 Alternative 2: ROW South of SR 74

Under Alternative 2, a five-mile long segment that parallels the south side of SR 74 from the 163rd Avenue alignment to just west of the El Mirage Road alignment on private land would replace an approximately five-mile long segment of the Proposed Action north of SR 74 on public lands, likewise being located within a 200-foot wide ROW. Besides this five-mile long segment, all other segments of the Alternative 2 route would remain within the ACC-certificated route and would follow the Proposed Action route. Alternative 2 would also amend the Bradshaw-Harquahala RMP to establish a multiuse utility corridor on the entire block of BLM-managed public lands immediately south of SR 74 and to change the VRM designation from VRM Class III to VRM Class IV in this same entire block area.

ES.7.4 Alternative 3: Carefree Highway Route

Alternative 3 would replace an approximately nine-mile long segment of the Proposed Action route north of SR 74 from the 179th Avenue alignment to the Morgan Substation by using the Carefree Highway alignment. The alternative extends south from the Proposed Action route at SR 74 along the 179th Avenue alignment and continues south two miles to the Carefree Highway alignment. The route then follows the Carefree Highway alignment east

for about 8 miles to about 99th Avenue, where the alignment approaches the existing Salt River Project Navajo 500kV and Western Area Power Administration 230kV transmission line corridor. From that point, Alternative 3 turns northeast and follows the transmission corridor to the Morgan Substation. Aside from this nine-mile long segment, all other segments of the Alternative 3 route would remain within the ACC-certificated route and would follow the Proposed Action route. Under Alternative 3 the Bradshaw-Harquahala RMP would not be amended.

ES.7.5 Sub-alternative: State Trust Land Route Variation

The Sub-alternative route would replace a four-mile section of the Proposed Action route that would also be common to all Action Alternatives; therefore, it could be combined with any of the Action Alternatives. The Sub-alternative route would begin at the intersection of 235th Avenue and the Cloud Road alignment, just north of US 60. From that intersection point, the Sub-alternative would parallel the north side of the Cloud Road alignment, east for three miles to the intersection with 211th Avenue. The Sub-alternative would then parallel the west side of 211th Avenue for one mile north, where it would rejoin the portion of the Proposed Action route that is common to all Action Alternatives at the Joy Ranch Road alignment. The entire four-mile length of the Sub-alternative route would be outside the ACC-certificated route. This Sub-alternative is being analyzed and presented only for environmental analysis purposes as requested by ASLD and does not affect the BLM's decision-making process as it would not require the BLM issuance of a ROW or an RMPA.

ES.7.6 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, or to change the VRM Class; and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on the resources of the Project Area as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, and could pursue other options to develop the Project without using public lands. Under this situation, impacts to resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to resources and the magnitude of those impacts would depend on the route selected.

Under the No Action Alternative, if APS were to pursue other potential routes outside the ACC-certificated route, implementation could only occur if the ACC amended the CEC that has been issued for this Project. Even if any future route would include portions of the previously certificated route, the ACC's consideration of amending the CEC would open the entire route decision up for review and consideration, and would not be limited to discrete portions; a process that could conceivably be as lengthy and involved as the consideration of the original ACC application filed by APS, taking approximately one to three years (depending on whether the route would be a modification to an existing alternative or a new alternative route).

ES.8 ENVIRONMENTAL SETTING

The Project Area is within the North American Deserts Ecoregion (Level I division) and the Sonoran Basin and Range subdivision (Level III division). The subregion is distinguished by paloverde-cactus vegetation including saguaro, cholla, and agave cacti.

The Project Area is within the Basin and Range Physiographic Province. The climate of the province is characterized by being the driest in the United States. The topography is characterized by mountain ranges that are roughly parallel. The basins between the ranges are relatively flat plains with gentle slopes next to the mountains. The Project Area is in the Sonoran Desert subdivision of the physiographic province. The subdivision is characterized by being approximately 20 percent mountains and 80 percent plains. The mountains vary from hills and buttes up to mountains rising 4,000 feet above sea level. The desert plains mostly lie below 2,000 feet elevation.

The economy of the region has historically been based on irrigated agriculture, livestock grazing, and mining. Today federal and State Trust land includes commercial, recreational, range, and undeveloped lands. Private land includes residential, commercial, and industrial areas. The primary types of residential land adjacent to the Project Area are low- to medium-density suburban and rural areas. Commercial areas are sparse within the Project Area, although some recreational lands include a commercial component. The industrial land is mainly used for manufacturing, landfill, and mining operations.

The potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) is described in detail in **Chapter 3**. A total of 15 resources identified through public and agency scoping and collaboration with the Interdisciplinary Team are brought forward for analysis and described in **Chapter 4**.

ES.9 ENVIRONMENTAL IMPACTS

Detailed descriptions of the impacts under the Proposed Action, each Action Alternative, and the No Action alternative are provided in **Chapter 4**, along with a discussion of potential mitigation measures, unavoidable adverse impacts, short-term uses versus long-term productivity, and irretrievable and irreversible commitments of resources that would result from implementation of the alternatives. Cumulative impacts to resource values and uses of the Project that would result from implementation of the Action Alternatives are also disclosed in **Chapter 4**. A summary describing the general conclusions of the effects analysis is presented below.

ES.9.1 Air Quality and Climate Change

Emissions from construction equipment would result from the combustion of fossil fuels (primarily diesel fuel used in compression ignition engines) used to power construction equipment and would comprise the bulk of the total gaseous pollutants (carbon monoxide, volatile organic compound [VOC], nitrogen oxide [NO_x], sodium oxide, green house gases [GHGs]) emitted from the Project. Exhaust from various types of construction equipment taken into consideration for emissions estimation include bulldozers, graters, cranes, pickup trucks, water trucks, hole diggers, backhoes, dump trucks, drills, pole haul trucks, drum pullers, tensioners, splicing equipment, 2-ton trucks, 5-ton trucks, and boom trucks. The

types of activities that would take place during the construction phase include access road construction, pad preparation, surveying, hole digging, foundation installation, hauling and erecting transmission line structures, conductoring (stringing of power lines), clean up, and reclamation.

The majority of the particulate emissions from the Proposed Action or Action Alternatives would be due to fugitive dust emissions caused by ground disturbance activities. Fugitive dust emissions particulate matter equal to or less than 10 microns in diameter (PM_{10}) and particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$) would result from earthmoving activities such as road construction, grading, land clearing, excavation, cut and fill operations, track-out emissions, and vehicular traffic over paved and unpaved access roads. Additional fugitive emissions would be generated due to windblown dust (erosion) from areas where the ground is disturbed and exposed to wind effects.

A portion of the Project would be constructed within the designated PM_{10} non-attainment area. Due to its PM_{10} non-attainment status, the Maricopa County Air Quality Department has instituted stringent fugitive dust control regulations and control measure requirements for earthmoving projects within the county. Therefore, routine watering would be required along with other mitigation measures to minimize fugitive dust emissions impacts.

Given the transient nature of the PM_{10} and $PM_{2.5}$ emissions, and the fact that, even during peak construction activity, the resulting emissions represent relatively small increases (less than one percent) above the current emission rates in Maricopa County, it is highly unlikely that the Project would cause or contribute to an exceedance or violation of any applicable particulate standard.

Emissions calculations for the construction and operational phases of the Project demonstrate that PM_{10}, NO_x, and VOC emissions would be below de minimis levels for State Implementation Plan Conformity and therefore, the Project would be considered a minor source of air emissions and further analysis under the General Conformity Rule is not necessary. Although the Project would be a minor source for particulate emissions, the applicant-committed particulate control measures would serve to minimize particulate emissions due to ground disturbance activities (the largest contributor to PM_{10}/$PM_{2.5}$ emissions), thereby ensuring compliance with State Implementation Plan requirements.

There is no established method to assess the impact of GHG emissions and in the absence of any applicable ambient standard or significance levels, a meaningful assessment of the climate change impacts of the GHG emissions cannot be determined. Therefore, the climate change impact analysis is limited to quantification of the GHG emissions.

ES.9.2 Cultural Resources

Nine National Register-eligible cultural resource sites (i.e., historic properties) are known to be within the Proposed Action route. These include three historic sites, four prehistoric sites, and two multi-component sites. Transmission line structure placement would be modified to avoid and span National Register-eligible sites where possible. The physical destruction of or damage to all or part of eligible sites that cannot be avoided would destroy or diminish the characteristics that make them eligible for the National Register. Impacts could potentially be avoided through construction design modification or mitigated through data recovery studies.

Impacts would likely be minor to moderate and long-term. Impacts under any of the Action Alternatives would be similar to the Proposed Action.

No additional direct impacts to National Register-eligible cultural resources from operations, maintenance, and abandonment would be anticipated.

Unless fenced or otherwise protected, National Register-eligible sites within the long-term transmission line ROW could be inadvertently impacted during operation and maintenance of the transmission line facilities. A long-term monitoring program would be implemented to regularly assess and document the condition of sites and to identify and implement measures to reduce any observed or ongoing damage.

Indirect visual impacts to the setting of National Register-eligible cultural resources were evaluated for the Beardsley Canal, the Calderwood Butte Archaeological District, the Morristown Store, the Santa Fe, Prescott, & Phoenix Railway, the Seymour III site, and the Surly site. The introduction of the Proposed Action in these sites' settings would not diminish the characteristics that make them eligible for the National Register.

There would be no direct or indirect construction or operational impacts to known sacred sites or natural features of cultural and/or geographic interest to Indian tribes. However, tribes have expressed concern about effects to prehistoric sites they regard as ancestral. Hohokam sites along the Agua Fria River, some of which may contain human remains, are of particular concern.

ES.9.3 Geology and Minerals

Construction activities for the transmission line could locally alter surface topography if large cut and/or fill earth moving work is needed to install the transmission line structures or construct access roads. The Proposed Action and Action Alternatives would have a negligible impact on the exploration for and development of leasable mineral resources and no impact on development of saleable mineral resources within the Mineral Restriction areas. There would be a negligible impact on the ability to develop and mine a sand and gravel resource that would be crossed under the Proposed Action or Action Alternatives. The Project would not be expected to impact any existing mining activities.

ES.9.4 Hazardous Materials and Hazardous and Solid Waste

All Action Alternatives would involve the use of hazardous materials and generation of solid and hazardous waste during construction and operation of the Project. Certain chemicals and materials that would be used are characterized as hazardous materials. Potential effects from the Project involving hazardous materials would be associated with the release of hazardous materials to the environment due to improper use, storage, or disposal of hazardous materials and/or generating contaminated soil from releases of hazardous materials. Direct effects of such releases could include contamination of vegetation, soil, and water, which could result in indirect effects to human and wildlife populations. These effects have the potential to occur during construction, operation, maintenance, and decommissioning of the Project.

With adherence to applicable laws and regulations as well as applicant-committed environmental protection measures, hazardous materials would be properly handled and all wastes would be properly contained, transported, and disposed of offsite. There should be no

impacts to workers, the general public, surrounding soils, surface water, or groundwater. A variety of safety-related plans and programs would be implemented to ensure safe handling, storage, and use of hazardous materials.

ES.9.5 Land Use and Range Resources

The amount of BLM lands that would be crossed/affected varies by alternative; however, in all cases the amount would be proportionally small compared to the total amount of BLM lands within and adjacent to the Project Area. Because the portion of BLM lands where the land use would be affected by the Proposed Action or any of the Action Alternative routes would be relatively small, overall impacts to BLM-managed land use would be minor, regardless of alternative.

Private and State Trust lands crossed by the ROW under all Action Alternatives are predominantly undeveloped, with much of the State Trust land used as grazing allotments. Addition of the proposed transmission line and associated disturbance (such as a centerline access road) would reduce the acreage available for grazing. Similar to the BLM lands discussed above, the amount of private and State Trust lands crossed/affected varies by alternative; however, in all cases the amount would be proportionally small compared to the total amount of private and State Trust lands within and adjacent to the Project Area. Because the portion of private and State Trust lands where the land use would be affected by the Proposed Action or any of the Action Alternative routes would be relatively small, overall impacts to land use would be minor, regardless of alternative.

Existing ROWs on BLM-managed land that would be crossed by the Proposed Action and Action Alternatives consist of various transmission, distribution, and communication lines; roads, and easements. The crossing of existing BLM ROWs by the proposed ROW under the Proposed Action or any of the Action Alternatives should not affect the management or administration of the existing ROWs. There would be no land use impacts to existing commercial or industrial areas, or utilities under the Proposed Action or any of the Action Alternatives.

Under the Proposed Action and all Action Alternatives one percent or less of the portion of each grazing allotment to be crossed and less than one Animal Unit Month for each grazing allotment would be impacted in the short and long term. Therefore, the Proposed Action would have a negligible effect on grazing allotments. No reduction of any Animal Unit Months should be required. However, during construction activities, animals using the various allotments where activities are occurring would likely be temporary displaced from the immediate area until construction activities are completed.

ES.9.6 Public Health and Safety

Noise during construction would be associated with the equipment used for the installation activities. The closest residential area, common to all the Action Alternatives, would be residences on West Myers Street, near N. 235th Avenue, which are less than 0.25 miles from the ROW. Maximum construction noise levels are expected from use of helicopters during conductor stringing and from heavy equipment used during construction activities on the ROW. It is expected that maximum noise levels at 50 feet from the helicopter would be 105 dBA and from heavy equipment at 50 feet to be in the range of 83 to 85 dBA. Sound levels

are expected to diverge in open air resulting in a 6-dBA decrease for each doubling of distance from the source. The maximum noise levels would be intermittent and temporary, as construction activities proceeded along the ROW, and would be incurred only during daylight (normal working hours; see **Section 2.9.6**).

Electro Magnetic Fields and their effects are essentially equivalent among all Action Alternatives. During normal operation and maintenance of any of the Action Alternatives, the expected range of Electromagnetic fields is between 8 and 20 milliGauss, which also accounts for additive effects of paralleling other 500kV and 230kV lines that may be crossed. Other, smaller (69kV) lines may also be crossed, but would result in Electromagnetic fields less than or similar to the projected range. The expected range of Electromagnetic fields is at least two orders of magnitude less than the recommended exposure limit of 2,000 milliGauss. The Electromagnetic fields would thus be measureable but small, resulting in a minor but long-term impact, similar among all of the Action Alternatives.

Fire danger during construction activities associated with the Project under all Action Alternatives would be associated with equipment operations, personnel actions, and materials handling along the ROW during the construction activities. Construction activity could result in increased potential for fire in the ROW due to such occurrences as equipment or material sparks, workers smoking, or disturbances which cause non-native fire prone vegetation to establish itself. As the construction activities progress along the ROW, that particular section would be exposed to somewhat increased fire risk due to those activities and machinery presence. The increased risk would then subside as the construction activity progresses further down the ROW.

Fire danger during operation of the transmission line would be associated with increased risk due to the physical presence of the transmission line and the conveyance of electrical energy over the electrical conductors. Physical presence of the transmission line may increase the likelihood of lightning strikes in the vicinity of the transmission line and structures, which would lead to a small increased risk of lightning caused fires along the entire route of the Project. Shield wires would be installed near the top of the structures and above the conductors, which would minimize the chance of lightning strikes. Additionally, mechanical malfunction or failure of transmission line components would have an associated risk of increased fire danger in the vicinity of the transmission line ROW. This increased risk would be present during the operational lifetime of the Project.

ES.9.7 Paleontology

The paleontological records search report indicates that there are no known vertebrate fossil localities within one mile of the Project Area and the potential for significant paleontological resources ranges from very low to unknown. The Potential Fossil Yield Classification assessment along with the Paleontological Potential of Rock Units assessment and the literature review suggests potential for significant vertebrate fossils is unlikely for the Project Area. If environmental protection measures and best management practices are implemented, impacts to paleontological resources would be negligible to minor and long-term.

ES.9.8 Recreation and Special Designations

Construction of the transmission line on BLM-managed public lands would affect the recreational experience in the short term through the activity and noise associated with construction activities. Access to portions of the Castle Hot Springs Special Recreation Management Area may be prohibited for short periods of time. The main short-term impact related to OHV recreational use would be decreased OHV trail availability during construction. OHV users would temporarily have decreased access into the Castle Rock Springs Special Recreation Management Area and the Resource Management Zones within it.

Under the Proposed Action the impacted routes represent approximately three percent of two-track trails in the Study Area. The impacted routes would be opened again after construction. The centerline access for construction would be designated an Administrative road, which would be closed to recreational use after completion of construction. The road would be patrolled and the prohibition of recreational use enforced; however, single-track trail users would be permitted to intersect the centerline access road and continue along the single-track routes. As a result, there would be no loss of single-track trails. Under Alternative 2, single-track trails, heavily used OHV recreation resources north of SR 74, and The Boulders Staging Area would not be affected.

Of the 18 Special Recreation Permits identified within or adjacent to the Project Area for commercial and competitive uses such as organized group events and activities, ten could be affected by the construction and/or presence of the transmission line under the Proposed Action and Action Alternatives.

There would not be any effect to lands with special designations under the Proposed Action or any of the Action Alternatives.

ES.9.9 Socioeconomics and Environmental Justice

Project construction costs range from $101 to $104 million dollars depending upon the Action Alternative selected. Right-of-way acquisition costs range between an additional $23 to $29 million dollars depending upon the Action Alternative selected. The construction of the transmission line would have a beneficial effect on employment, labor income, value added, and output in Maricopa County. These effects would be minor and short-term, and terminate with the completion of the transmission line. Some of these temporary benefits could flow to communities within and adjacent to the Project Area. Although anticipated to be negligible, the economic effects of operating and maintaining the transmission line would be beneficial and long-term.

Economic effects would occur to property taxes as the Project would change land use patterns and potentially affect the property taxes paid on the affected land. Impacts to property values from the Project would occur to property located within 200 feet of the transmission line or to private property adjoining the ROW. Presently there are no residential structures within 200 feet of the transmission line under the Proposed Action, Alternatives 1, 2, or 3; therefore, the effects would be to undeveloped land under these alternatives. Under the Sub-alternative route, four residences appear to be within 200 feet of the transmission line, and 20 to 30 residences may be on properties that would adjoin the ROW. The potential

effects on undeveloped land values range from 0 to 34.0 percent depending on location, available amenities, and current market conditions. The effects to land owners could be adverse, minor, and short-term.

Private land acquired for the Project would change land use patterns and could potentially affect the property taxes paid on this land. The presence of a transmission line could negatively affect the assessed value of the lands crossed. A decrease in assessed valuation could result in a decrease in tax revenue. Offsetting the potential loss of tax revenue would be property taxes paid by APS on the value of installed equipment on the land; however, this net increase in tax revenue would be a relatively small proportion of property tax revenue generated within the county. The net effect on property tax revenue, under current land uses of private properties located within 200 feet of the transmission line is beneficial, minor, and long-term.

State Trust lands would be affected as they would be leased to APS and removed from future development or sale, and impacting to current grazing activities. Indirect socioeconomic impacts to recreation use, ecosystem services, and quality of life issues (i.e. visual, recreation, and health and safety concerns) would also occur from the Project. Impacts could be short-term related to temporarily closing trails and OHV routes and long-term related to the visual impacts to the scenic views and changes in the recreation experience. Due to insufficient data, the magnitude of short- and long-term effects cannot be estimated.

Regarding Environmental Justice, one low-income population was identified at the census tract block group scale within the Project Area. The Project route would cross through approximately 3.3 miles of this tract; the majority of which would be situated on State Trust land. The Environmental Justice issues of concern from the Project involve aesthetic and economic impacts that would affect the Environmental Justice minority population census block group. Analysis found that proportions of the route affecting private developed/occupied property within the EJ community versus outside the EJ community, and proximity of the ROW to private developed/occupied property do not indicate a disproportionate effect.

ES.9.10 Soils

Direct physical impacts would occur to 22 different soil types under the Proposed Action or any of the Action Alternatives and would include compaction and crushing of the topsoil by equipment during salvage, stockpiling, construction, and reclamation activities. Physical effects of soil compaction would be short-term, minor to moderate, and include reduced permeability and porosity, damage to microbiotic crusts, increased bulk density, decreased available water holding capacity, and increased erosion potential. Soil microorganisms such as bacteria and fungi, important in the decomposition of biological materials and the formation and improvement of soil, would be impacted. Natural processes, such as wind and water transport of soil particles from surrounding areas would continually inoculate the site with these microorganisms.

After construction activities, all work areas identified as temporary disturbance would be reclaimed and salvaged topsoil would be re-distributed. With the implementation of topsoil salvage and reuse practices, soil conservation measures, best management practices, and

other proposed operating procedures, impacts to the temporarily disturbed acres of the soil resource would be site-specific, temporary, and moderate.

Long-term operations and maintenance of the transmission line facilities may require access to the route via existing roads, and may result in temporary disturbance; however, this effect would be minor to negligible.

ES.9.11 Transportation and Traffic

The majority of effects to transportation and traffic would occur during the estimated 22-month construction phase of the proposed Project. Under all Action Alternatives, various combinations of local arterial and collector roads would be required for continuous access. The majority of these access routes would utilize existing public streets, highways, private roads, and adjacent gravel/unsurfaced roads. A portion of needed access would require either improvements to existing roads or the development of new roads, with associated ROW approval for all the roads.

In general, all construction access roads developed/improved outside the transmission line ROW would be reclaimed at least back to their original, pre-disturbance condition. Therefore, these access roads would be considered temporary, especially because some of the proposed access roads outside the ROW are already trails and/or two-track unsurfaced roads.

All construction access roads developed/improved inside the transmission line ROW would not be reclaimed and therefore would be considered permanent.

Under the Proposed Action or Action Alternatives there would be a total of approximately 8.5 to 9.5 miles of temporary access roads constructed/improved outside of the ROW, and approximately 38 miles of permanent, access road constructed approximately parallel and/or along the centerline of the ROW.

Construction-related traffic would vary according to the phase of the construction, and would move with the progress of the construction. The Project is expected to generate 21,712 vehicle trips during the 22-month construction period. These trips would all occur on SR 74 and US 60. The greatest increase in traffic would occur during the conductoring phase of construction; 32 construction-related vehicle trips per day would occur on SR 74 and US 60 for 80 days. This represents less than a one percent increase in daily traffic on these two roadways, which while measurable, is unlikely to be noticed by other motorists. Therefore, the increase in traffic due to Project construction represents a minor, short-term adverse effect.

ES.9.12 Vegetation Resources, Including Noxious and Invasive Weeds, and Special Status Plants

The Proposed Action and all Action Alternatives contain a very similar amount of (estimated) temporary and permanent disturbance. The two main vegetation types within the ROWs, creosote-white bursage desert scrub and Sonoran paloverde mixed cacti desert scrub, are also similarly distributed. Creosote-white bursage desert scrub occurs mainly west of US 60, where the Proposed Action and Action Alternative routes follow the same alignment, and Sonoran paloverde mixed cacti desert scrub occurs mainly east of US 60. The adverse impacts under all Action Alternatives from disturbance of both desert scrub vegetation types

would be long-term and minor, because the removal of this vegetation would only be measurable on the scale of local communities immediately adjacent to the ROW.

Riparian habitats (Riparian Mesquite Bosque and Riparian Desert Shrubland) within the ROW would be avoided and would not be disturbed by construction activities.

The crushing or removal of special status plant individuals would impact individual plants as well as reduce local population sizes if the species is common. Many salvage-restricted native plants were found throughout or in large parts of the Project Area. Pre-construction surveys would locate special status plant individuals in the construction zone and any that cannot be avoided would be relocated/transplanted in accordance with the Arizona Native Plant Law. However, not all relocated/transplanted individuals are expected to establish after re-planting due to arid conditions and stress. Large numbers of individuals would likely be removed permanently. In addition, suitable habitat for these species would be lost within the ROW as the ground is disturbed. Impacts would be moderate and long-term for most salvage-restricted species, including saguaro, teddybear cholla, straw-topped cholla, tree cholla, Engelmann's hedgehog cactus, California barrel cactus, ocotillo, and yellow-spine prickly pear. Impacts would be moderate because these species are common in the area (particularly within paloverde scrub habitat east of US 60) and local population distributions may be adversely affected due to the number of individuals removed.

Hohokam agave, a Sensitive species that has shown declines, would be adversely affected at the population scale by a loss of individuals. A biological monitor onsite would ensure that Hohokam agave individuals would be avoided. However, river terraces (suitable habitat) may be disturbed under any Action Alternative. If individuals are present, the loss of suitable habitat in the occupied area would be moderate and long-term.

Bigelow's onion, a salvage-restricted species that may occur around the Agua Fria River, would be avoided if possible, or salvaged. Suitable habitat would be disturbed, thus a loss of suitable habitat would occur under all Action Alternatives. These impacts would be long-term and minor, because only habitat in the local area (immediately surrounding the Agua Fria River) would be affected.

The likelihood of invasive and noxious species introduction differs for each invasive and noxious species. In general, invasive and noxious weeds reproduce by seed and are spread rapidly and effectively by animal vectors, vehicles, wind, water, or physical movement (such as Russian thistle). Several invasive and noxious plant species were observed within and adjacent to the Project Area, within roadways, disturbed areas, and in ditches and drainages. If noxious weeds are already present at a site, disturbing the plants would likely facilitate the physical spread of seeds, and disturbing adjacent ground would open up space for new individuals to invade. Thus, any surface-disturbing activity in the vicinity of invasive or noxious plant species increases the potential for further spread and establishment of those species. Impacts from invasive and noxious plant species under any Action Alternative would be short-term and minor, considering mitigation measures.

ES.9.13 Visual Resources

Visual contrast between the proposed Project and the surrounding landscape would vary from none to strong, depending on where the Project would be viewed from. The Proposed Action would comply with the visual components of the Town of Buckeye General Plan and the City of Peoria General Plan, where applicable.

The Proposed Action would meet the BLM VRM class objectives for the portion of the project within the existing BLM-designated utility corridor in the southern portion of the Project Area. The transmission line would dominate the view within an estimated 800 feet of the transmission line, and in these areas on BLM-managed public lands in the vicinity of SR 74 would not meet VRM Class III objectives. The Proposed Action would meet VRM Class objectives on approximately half of the VRM Class III-designated lands north of SR 74 and approximately 75 percent of the Class III-designated lands south of SR 74. However, the RMPA would change the VRM Class from Class III to Class IV and the transmission line would meet VRM Class IV objectives.

The overall long-term impacts under the Proposed Action are as follows:

- Portion of the route common to all Action Alternatives (both on and off BLM-managed public lands) – Minor
- Portion of the route on BLM-managed public lands within the linear KOP - Major
- Portion of the route on all other lands - Minor
- Views from SR 74 – Moderate
- Castle Hot Springs Special Recreation Management Area – Minor to Moderate
- Lake Pleasant Regional Park – Negligible to Minor

In the area where the transmission line would dominate the view on BLM-managed public lands, it would be a very discordant element; however, it would not affect the Scenic Quality rating assigned to the Scenic Quality Rating Unit, and there would be no effect to the Visual Resources Inventory.

ES.9.14 Water Resources

If the estimated short-term, average 48,000 gallons per day (33 gallons per minute) of construction water were sourced from surface water, it would be leased or purchased from an existing municipal or agricultural user. This water would not likely come from one of the washes within or near the Project Area, because they only flow ephemerally and are not reliable water sources. If construction water were sourced from either of the two major streams in the area (the Agua Fria and Hassayampa rivers), it would likely be obtained from reservoirs upstream of the Project Area or from one of the distribution canals such as the Central Arizona Project. Project impacts to volume, timing, and/or extent of surface water flow resulting from this water usage would be negligible because the quantity would be small, the period of use would be temporary, and it would represent an alteration of an existing use rather than a new use.

If the estimated construction water were sourced from groundwater, it would be leased or purchased from an existing well owner. The existing well would likely be situated in the alluvial aquifer of the Phoenix Aquifer Management Area. Due to the small amount of water required, the well owner would not need a grandfathered right or withdrawal permit to pump from the Aquifer Management Area. Further, Project use would not represent a new groundwater withdrawal, and would therefore have a negligible impact on groundwater quantity or levels in the alluvial aquifer.

Construction activities almost always have the potential to locally increase runoff due to vegetation removal, soil compaction, and drainage path modification. The ephemeral washes within or adjacent to the Project Area are naturally subject to very wide fluctuations in discharge that occur on an erratic basis and their channel characteristics have been formed accordingly. If minor changes in runoff characteristics did occur, they would not be likely to have a noticeable effect on channel morphology or these channels' abilities to provide for flood control, energy dissipation, and sediment movement.

Similarly, construction activities generally have the potential to increase turbidity, suspended sediment concentrations, and/or dissolved mineral concentrations, either due to erosion of upland soils or in-stream bed and bank erosion. However, local surface waters are likely naturally high in turbidity because of suspended particulates and likely to contain naturally occurring constituents that are leached from the soils, including minerals and salts. Any increases that may be due to construction activities would likely be negligible or minor due to the limited and dispersed disturbance acreage and the implementation of erosion and runoff control best management practices.

Although construction-related disturbances would occur throughout the ROW, and thus would be done within or proximate to ephemeral drainages, APS does not plan to place transmission line structures, anchors, or other permanent structures within the drainage channels. Instead, all washes would be spanned. This would help to minimize water quality degradation (such as increases in turbidity, suspended sediments, or minerals). It would also help to minimize impacts to riparian vegetation, if any, associated with the drainage channel, which in turn would also help to maintain water quality. Even the widest channel (the Agua Fria River crossing) under all Action Alternatives would be well within the allowable span length. However, given the width of floodplains, some structures may inevitably need to be located within the floodplain.

Although the footprint of permanent structures placed within the floodplain would be small, these structures could possibly impede flood flows or redirect flood flows to areas not currently within a flood hazard area by raising the base flood elevation. However, APS would obtain proper permits for such locations and conduct any necessary assessments including scour analysis and/or potential for flow displacement.

The Proposed Action and other Action Alternatives would each cross more than 500 drainages (both jurisdictional and non-jurisdictional). The number of jurisdictional drainages that could be impacted by each alternative would be similar for the Proposed Action and Action Alternatives. The acreage of disturbance, both short- and long-term, would be relatively similar and would have the same impact potential under all Action Alternatives.

ES.9.15 Wildlife Resources, Including Special-Status Wildlife and Migratory Birds

Direct impacts to small mammals and reptiles would occur during construction activities when individuals are unable to move away from vehicles and other heavy equipment. Mortality would occur when individuals are buried or run over by equipment; many small mammals and reptiles utilize small burrows underground, so these impacts are particularly likely if individuals stay underground within the direct disturbance area instead of moving to adjacent habitat. In general, large mammals would not be directly impacted by construction equipment because they would move away from the disturbance area or could be easily seen and avoided.

The removal of desert scrub habitats for either temporary or permanent uses under any Action Alternative would essentially be a permanent removal of habitat for wildlife and special status species. Sonoran desert vegetation is slow-growing and although annuals would colonize in the short-term following disturbance, a stable, perennial community would not emerge for the long-term. Impacts to wildlife and special status species from desert scrub habitat losses would be minor because only wildlife individuals in the area immediately within and adjacent to the ROW would be adversely affected, and there would be no change to species' distributions.

Riparian areas and desert washes are high-value centers of biodiversity and are used by a wide variety of wildlife, including special status amphibians, birds, and mammals. Riparian areas would be avoided and would not be disturbed by construction activities. Impacts from habitat losses to species that utilize riparian habitats, therefore, would be negligible. Desert washes containing seasonal flows or riparian vegetation would be avoided if possible. The loss of desert wash habitat, if it occurred, would be long-term and moderate for two special status species: crissal thrasher and Lucy's warbler. Habitat capability for these species would be adversely affected by the loss of these areas. Desert washes are mainly present west of the Action Alternative routes (i.e., Hieroglyphic Mountain area), so any disturbance to these areas would be the same under all Action Alternatives.

Smaller mammals and reptiles would be affected by noise if individuals cannot escape by fleeing the construction area or by finding refuge underground. Hearing capabilities in these individuals may be damaged for the short- or long-term and may affect predator detection abilities. These impacts would be minor, as only individuals in the immediate vicinity of construction activities would be affected. Larger mammals such as coyotes or badgers would move away from construction noise, would be displaced for the duration, and may return to the area following construction activities. Other species that may be using the area for foraging would be similarly displaced.

The Proposed Action and Action Alternative routes cross varying amounts of Category II and Category III tortoise habitat. Disturbances and degradation of tortoise habitat would be avoided or minimized during construction. The maximum amount possible of tortoise habitat would be maintained within the footprint of the alternative route in order to ensure the existence of viable populations within suitable habitat. Any disturbance of Category II and Category III tortoise habitat would be compensated at a rate determined by the BLM and APS. BLM's mandate is "no net loss" of desert tortoises or habitat.

Pre-construction surveys would be implemented during the nesting season to locate raptor and other migratory bird nests. If a nest is found, a timing or spatial buffer may be implemented following BLM guidelines. Incidental take of migratory birds is not permitted under BLM policy. Nests would be avoided; however, some nests may be within a larger radius where noise impacts may still be present, but would not cause adverse reproductive effects. In addition, many migratory birds would be present and not nesting in the area; these individuals would simply avoid the noise. Impacts to migratory birds from noise would be short-term and minor, as only individuals in the local area would be affected.

ES.10 POTENTIAL MITIGATION MEASURES

Under the Proposed Action and all Action Alternatives, applicant-committed environmental protection measures and best management practices would be implemented to minimize adverse impacts to sensitive environmental resources (see **Section 2.4.5**).

Under all Action Alternatives, APS would comply with applicable laws, ordinances, regulations, and standards, and would obtain and meet the requirements of all necessary permits. Resource specific laws, ordinances, regulations, and standards are presented in **Chapter 3** and, as applicable to the analysis, **Chapter 4**.

Potential mitigation measures are also proposed for individual resources in **Chapter 4**. Potential mitigation includes additional means, measures, or practices not incorporated into the Proposed Action or Action Alternatives that would further reduce or eliminate impacts. Unavoidable adverse impacts that would persist following implementation of potential mitigation measures are addressed immediately following each potential mitigation measures section in **Chapter 4**.

ES.11 AGENCY PREFERRED ALTERNATIVE

The BLM has identified the Proposed Action route crossing public lands managed by the BLM as the Agency Preferred Alternative route for the proposed transmission line. Under the Agency Preferred Alternative, the BLM would approve a 200-foot wide ROW within the existing designated utility corridor northeast of the Sun Valley Substation. In addition, the BLM would amend the Bradshaw-Harquahala RMP to:

- Designate a single-use 200-foot wide utility corridor on BLM-managed public lands north of SR 74,
- Designate a multiuse utility corridor within the key-shaped piece of BLM-managed public lands south of SR 74, and
- Change the existing VRM Class designations of portions of BLM-managed public lands north and south of SR 74 from VRM Class III to VRM Class IV to allow for the newly established utility corridors.

Upon amendment of the Bradshaw-Harquahala RMP, the BLM would approve a 200-foot wide ROW following the Proposed Action route within the newly designated utility corridors.

The Preferred Alternative will reasonably accomplish the purpose and need for the federal action, while fulfilling the BLM's statutory mission and responsibilities, giving consideration to environmental, economic, and technical factors. This action is responsive to public input for avoiding environmental and economic impacts to lands in the project vicinity.

ES.12 AGENCY CONSULTATION AND COORDINATION

A total of 33 agencies were sent a letter inviting them to participate as a cooperating agency. Six agencies have accepted to participate; the following federal, state, and local agencies have signed on and been consulted during preparation of the EIS as Cooperating Agencies:

- U.S. Environmental Protection Agency
- U.S. Air Force - Luke Air Force Base
- Arizona State Land Department
- Maricopa Association of Governments
- City of Peoria
- City of Surprise

The BLM contacted the following eight American Indian tribes to notify them of the Proposed Action and initiate formal consultation in preparation of the EIS: Gila River Indian Community, Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, Tohono O'odham Nation, Yavapai Prescott Tribe, Yavapai Apache Nation, Fort McDowell Yavapai Nation, and the Hopi Tribe. In recognition of the special relationship with the United States government, the BLM will continue to consult with the appropriate tribal governments at an official, executive level (government-to-government) in accordance with the National Historic Preservation Act and other relevant legal authorities. The BLM will provide opportunities for government officials of federally recognized American Indian tribes to comment on and participate in the preparation of the EIS through review of the cultural resource inventory report prepared for this Project and will consider comments, notify consulted tribes of final decisions, and inform them of how their comments were addressed in those decisions. Tribes have expressed concern regarding amending the Bradshaw-Harquahala RMP and impacts to prehistoric sites. BLM conducts formal Section 106 consultation with the SHPO concurrently with tribal consultations.

ES.13 DRAFT ENVIRONMENTAL IMPACT STATEMENT DISTRIBUTION AND PUBLIC COMMENTS

The Draft EIS review period was initiated by publication of the Notice of Availability in the *Federal Register* on November 9, 2012 with the 90-day comment period ending February 8, 2013. A total of 131 CDs and/or hardcopies of the Draft EIS were distributed to interested parties identified in the EIS mailing list.

Three public hearings were held December 10, 11, and 12, 2012 in Peoria, Wittmann, and Phoenix, respectively. The hearings began each evening at 6:00 PM and continued until 8:00 PM. Each public hearing opened with an open-house style arrangement, where attendees could view Project maps and other Project information. During the public hearing portion of the meetings, the BLM provided a brief Project overview prior to hearing oral comments. A

court reporter was present during the public hearing portion of the meeting, who recorded the BLM's presentation as well as all oral comments made by the public.

A total of 1,279 comment letters and emails were received from the public after publication of the Draft EIS. This included one special interest group form letter (i.e., email campaign) and five other email form letters originating from individual interested parties; and the oral comments presented at the Draft EIS public hearings. All comments on the Draft EIS that were received were read and given careful consideration (**Chapter 6**). Text revisions were made as appropriate and are reflected in this Final EIS (see **Section ES.1**).

ES.14 NEXT STEPS

Following the 30-day availability period for the Final EIS and the 60-day Governor's Consistency Review period that run concurrently (required because of the Draft RMPA) the BLM will prepare two Records of Decision (ROD). Two separate decisions will be made, each requiring its own ROD: one decision regarding amendment of the Bradshaw-Harquahala RMP and one decision regarding the transmission line Project ROW. The BLM RODs will be distributed to individuals and organizations identified on the updated Project mailing list and will also be available via the Project website. A Notice of Availability for the RODs will be published in the *Federal Register*. A news release will be made to the same newspapers used for previous Project announcements. The RODs are currently planned for completion in the fall of 2013.

This page intentionally left blank.

TABLE OF CONTENTS

VOLUME I

EXECUTIVE SUMMARY ES-1

CHAPTER 1 INTRODUCTION, PURPOSE AND NEED 1-1

1.1 Introduction 1-1
1.1.1 Project Overview 1-1
1.1.2 Project History 1-2
1.2 Applicant's Objective 1-6
1.3 BLM's Purpose and Need 1-7
1.3.1 Purpose of the BLM Action 1-7
1.3.2 Need for the BLM Action 1-7
1.4 Lead and Cooperating Agencies 1-8
1.5 Regulatory Framework 1-8
1.5.1 NEPA and Plan Amendment Process 1-8
1.5.2 Relationship to Policies, Plans, and Programs 1-10
1.5.3 Applicable Laws and Regulations 1-13
1.5.4 Permits Required or Potentially Required 1-14
1.6 Tribal Consultation and Coordination 1-18
1.7 Scoping and Public Involvement 1-19
1.7.1 Federal Register Notice of Intent 1-19
1.7.2 Mailings, Posters, and Email Notifications 1-19
1.7.3 Media Contacts 1-20
1.7.4 Public Scoping Meetings 1-20
1.8 Issues Identified During Scoping 1-21
1.9 Organization of the EIS 1-27

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES 2-1

2.1 Introduction 2-1
2.2 Development of Alternatives 2-2
2.3 Description of Potential RMPA and ROW Actions 2-3
2.3.1 Resource Management Plan Amendment 2-3
2.3.2 Issuance of Rights-of-Way 2-4
2.4 Proposed Action 2-5
2.4.1 Proposed Facilities and Infrastructure 2-6
2.4.1.1 Transmission Line Support Structures 2-7
2.4.1.2 Transmission Line Hardware 2-8
2.4.1.3 Access Roads 2-8
2.4.1.4 Temporary Use Areas 2-9
2.4.2 Construction 2-10
2.4.2.1 Overview 2-10
2.4.2.2 Construction Requirements 2-10

2.4.2.3 Preconstruction Activities 2-13
2.4.2.4 Clearing and Grading 2-14
2.4.2.5 Transmission Line Construction 2-15
2.4.2.6 Special Construction Techniques 2-16
2.4.2.7 Safety Requirements during Construction 2-16
2.4.2.8 Cleanup and Site Reclamation 2-17
2.4.2.9 Temporary Disturbance Estimates 2-18
2.4.3 Operations and Maintenance 2-18
2.4.3.1 ROW Safety Requirements 2-19
2.4.3.2 Transmission Line Inspections and Maintenance 2-19
2.4.3.3 Permanent Access Roads along the ROW 2-20
2.4.3.4 Vegetation Management 2-20
2.4.3.5 Permanent Disturbance around Structures 2-22
2.4.3.6 Emergency Response and Fire Protection 2-22
2.4.3.7 Permanent Disturbance Estimates 2-23
2.4.4 Termination, Decommissioning, and Reclamation 2-23
2.4.4.1 Removal of Conductor and Structures 2-23
2.4.4.2 Obliteration of Structure Foundations 2-23
2.4.4.3 Reclamation of Roads 2-24
2.4.4.4 Stabilization and Revegetation of Disturbed Areas 2-24
2.4.5 Applicant-Committed Environmental Protection Measures and Best Management Practices 2-24
2.5 Action Alternatives 2-25
2.5.1 Alternative 1: Proposed Action with Additional Corridor 2-25
2.5.2 Alternative 2: ROW South of SR 74 2-26
2.5.3 Alternative 3: Carefree Highway Route 2-28
2.5.4 Sub-alternative: State Trust Land Route Variation 2-30
2.6 No Action Alternative 2-31
2.7 Alternatives Considered but Eliminated from Detailed Analysis 2-31
2.7.1 Cloud Road Route 2-32
2.7.1.1 Route Description 2-32
2.7.1.2 Route Overview and Screening 2-32
2.7.2 Hassayampa-Western SR 74 Route 2-33
2.7.2.1 Route Description 2-33
2.7.2.2 Route Overview and Screening 2-33
2.7.3 Hassayampa-Joy Ranch Road Route 2-34
2.7.3.1 Route Description 2-34
2.7.3.2 Route Overview and Screening 2-34
2.7.4 CAP Complete Route 2-35
2.7.4.1 CAP Background Information 2-35
2.7.4.2 Route Description 2-36
2.7.4.3 Route Overview and Screening 2-36
2.7.5 Luke Air Force Base Auxiliary Field #1 Bypass Route 2-38
2.7.5.1 Route Description 2-38
2.7.5.2 Route Overview and Screening 2-39

2.7.6 Vistancia Bypass Route 2-41
2.7.6.1 Route Description 2-41
2.7.6.2 Route Overview and Screening 2-42
2.7.7 Westwing/Navajo Corridor Route 2-43
2.7.7.1 Background Information 2-43
2.7.7.2 Route Description 2-43
2.7.7.3 Route Overview and Screening 2-44
2.7.8 Westwing/Grand Avenue-Navajo 500/230kV Separation 2-47
2.7.8.1 Route Description 2-47
2.7.8.2 Route Overview and Screening 2-47
2.7.9 CAP Canal Underwater 500/230kV Route 2-49
2.7.9.1 Route Description 2-49
2.7.9.2 Route Overview and Screening 2-49
2.7.10 Underground a Portion or All of the Project 2-50
2.7.10.1 Technology Background Information 2-50
2.7.10.2 Route Description 2-54
2.7.10.3 Route Overview and Screening 2-54
2.7.11 CAP to Grand Avenue 2-56
2.7.11.1 Route Description 2-56
2.7.11.2 Route Overview and Screening 2-57
2.7.12 Wittmann/Circle City Bypass Route 2-57
2.7.12.1 Route Description 2-58
2.7.12.2 Route Overview and Screening 2-58
2.7.13 Summary of Options and Route Screening Results 2-59
2.8 Comparison of Alternatives 2-69
2.9 Monitoring and Mitigation 2-85
2.9.1 Air Quality 2-85
2.9.2 Cultural Resources 2-87
2.9.3 Geology and Minerals 2-87
2.9.4 Hazardous Materials and Hazardous and Solid Waste 2-87
2.9.5 Land Use and Range Resources 2-88
2.9.6 Public Health and Safety 2-88
2.9.7 Paleontology 2-89
2.9.8 Recreation and Special Designations 2-89
2.9.9 Socioeconomics and Environmental Justice 2-90
2.9.10 Soils 2-90
2.9.11 Transportation and Traffic 2-91
2.9.12 Vegetation Resources, including Noxious and Invasive Weeds and Special Status Plants 2-92
2.9.13 Visual Resources 2-93
2.9.14 Water Resources 2-95
2.9.15 Wildlife Resources, including Special Status Wildlife and Migratory Birds 2-95
2.10 Agency Preferred Alternative 2-97

CHAPTER 3 AFFECTED ENVIRONMENT 3-1
3.1 Introduction.....3-1
3.1.1 General Setting of Project Area.....3-1
3.1.2 Resource Values and Uses Brought Forward for Analysis.....3-1
3.1.3 Analysis Area 3-2
3.2 Air Quality and Climate Change 3-2
3.2.1 Laws, Ordinances, Regulations, and Standards 3-3
3.2.1.1 State and Local Air Quality Regulations.....3-3
3.2.1.2 Federal Rules.....3-5
3.2.2 Study Area 3-7
3.2.3 Study Area Overview 3-8
3.2.4 Existing Air and Climate Quality.....3-8
3.2.4.1 National Ambient Air Quality Standards.....3-8
3.2.4.2 Clean Air Act Attainment Status.....3-11
3.2.5 Climate Change 3-12
3.2.5.1 Emission Sources 3-13
3.2.5.2 Global Effects.....3-13
3.2.5.3 Regional Effects.....3-14
3.2.5.4 Water Supplies.....3-15
3.2.5.5 Wildfires 3-16
3.2.5.6 Species Migration and Extinction 3-16
3.2.5.7 Air Pollution.....3-16
3.2.6 Visibility 3-17
3.2.7 Emissions Status.....3-17
3.2.8 Existing Emissions Intensity of Grid Electricity.....3-18
3.3 Cultural Resources.....3-18
3.3.1 Laws, Ordinances, Regulations, and Standards 3-18
3.3.2 Region of Influence (Area of Potential Effect) 3-20
3.3.3 Cultural History.....3-21
3.3.4 Inventory Methods.....3-25
3.3.5 Known Cultural Resources.....3-26
3.3.5.1 Proposed Action.....3-26
3.3.5.2 Alternative 1 3-28
3.3.5.3 Alternative 2 3-29
3.3.5.4 Alternative 3 3-29
3.3.5.5 State Trust Land Route Variation Sub-alternative.....3-30
3.3.5.6 Primary Segment Common to All Action Alternatives 3-30
3.3.6 Cultural Resources Sensitive to Indirect Visual Impacts 3-35
3.3.7 Native American Land Use and Cultural Affiliation.....3-37
3.4 Geology and Minerals.....3-38
3.4.1 Laws, Ordinances, Regulations, and Standards 3-38
3.4.2 Regional and Local Geology 3-39
3.4.3 Geological Hazards.....3-41
3.4.3.1 Subsidence and Earth Fissures 3-41

3.4.4 Mineral Resources 3-43
3.5 Hazardous Materials and Hazardous and Solid Waste 3-45
3.5.1 Laws, Ordinances, Regulations, and Standards 3-46
3.5.2 Study Area Conditions 3-47
3.5.2.1 Hazardous Materials Sites 3-48
3.5.2.2 Hazardous Waste Disposal Sites 3-49
3.6 Land Use and Range Resources 3-50
3.6.1 Land Use and Range Resources 3-50
3.6.2 Laws, Ordinances, Regulations and Standards 3-50
3.6.2.1 Federal 3-51
3.6.3 Land Ownership, Planning, and Management 3-52
3.6.3.1 Federal Plans 3-52
3.6.3.2 State Plans 3-54
3.6.3.3 Local Plans 3-55
3.6.3.4 Future Planned Land Use 3-57
3.6.4 Existing Land Use 3-58
3.6.4.1 Residential 3-58
3.6.4.2 Commercial 3-59
3.6.4.3 Recreation 3-59
3.6.4.4 Industrial 3-59
3.6.4.5 Utilities 3-59
3.6.4.6 Mining 3-60
3.6.4.7 Rights-of-Way 3-61
3.6.4.8 Air Transportation Facilities 3-62
3.6.4.9 Zoning 3-62
3.6.5 Range Resources 3-63
3.7 Public Health and Safety 3-65
3.7.1 Noise 3-65
3.7.1.1 Laws, Ordinances, Regulations, and Standards 3-65
3.7.1.2 Fundamentals of Acoustics 3-67
3.7.1.3 Existing Noise Sources in the Study Area 3-69
3.7.1.4 Baseline/Ambient Noise Level 3-71
3.7.2 Electromagnetic Fields 3-72
3.7.2.1 Laws, Ordinances, Regulations, and Standards 3-73
3.7.2.2 Overview of Electromagnetic Fields 3-74
3.7.2.3 Electromagnetic Fields Health Overview 3-76
3.7.2.4 Health Effects of Electromagnetic Fields 3-77
3.7.2.5 Electromagnetic Fields in Context 3-80
3.7.2.6 Electromagnetic Fields and Transmission Lines 3-81
3.7.2.7 Electromagnetic Fields and the Project 3-82
3.7.2.8 Summary 3-83
3.7.3 Fire 3-83
3.7.3.1 Laws, Ordinances, Regulations, and Standards 3-84
3.7.3.2 Fire History and Data 3-84
3.7.3.3 Fuel Types 3-84

3.7.3.4 Fire Regimes....3-85
3.7.3.5 Fire Regime Condition Class....3-85
3.7.3.6 Fire Management....3-86
3.8 Paleontology....3-87
3.8.1 Laws, Ordinances, Regulations, and Standards....3-87
3.8.2 Study Area Conditions....3-88
3.8.3 Paleontological Potential....3-88
3.8.4 Known Paleontological Resources....3-90
3.9 Recreation and Special Designations....3-91
3.9.1 Laws, Ordinances, Regulations, and Standards....3-91
3.9.2 Recreation Overview....3-91
3.9.3 Recreation Management....3-92
3.9.3.1 Bureau of Land Management....3-92
3.9.3.2 Other Entities....3-93
3.9.4 Recreational Use....3-96
3.9.4.1 OHV Recreation....3-96
3.9.4.2 Target Shooting....3-99
3.10 Socioeconomics and Environmental Justice....3-99
3.10.1 Overview....3-99
3.10.2 Applicable Laws, Rules, and Standards....3-99
3.10.3 Socioeconomic and Environmental Justice Study Areas....3-99
3.10.3.1 Socioeconomics....3-99
3.10.3.2 Environmental Justice....3-100
3.10.4 Socioeconomic Conditions....3-100
3.10.4.1 Populations....3-100
3.10.4.2 Employment and Earnings....3-101
3.10.4.3 Housing Values....3-103
3.10.5 Fiscal Conditions....3-104
3.10.5.1 Property Taxes....3-105
3.10.5.2 State Trust Land....3-106
3.10.5.3 Utility Rates....3-106
3.10.6 Recreation Expenditures....3-107
3.10.7 Property and Land Values....3-108
3.10.7.1 Health and Safety Concerns and Impacts on Property Values....3-108
3.10.7.2 Visual Impacts....3-108
3.10.7.3 Proximity and Property Values....3-109
3.10.8 Nonmarket Values Associated with Health and Safety, Recreation Use, and Natural Amenities....3-109
3.10.8.1 Health and Safety Concerns....3-110
3.10.8.2 Recreation Use....3-110
3.10.8.3 Natural Amenities....3-111
3.10.9 Environmental Justice....3-112
3.10.9.1 Minority Populations within the HRUs and Nine Communities....3-112

3.10.9.2 Low-Income Populations within the HRUs and Nine Communities 3-113
3.10.9.3 Environmental Justice Baseline Analysis 3-115
3.11 Soils 3-118
3.11.1 Laws, Ordinances, Regulations, and Standards 3-118
3.11.2 Soil Types Present 3-119
3.11.3 Soil Hazards 3-123
3.11.3.1 Expansive (Shrink-Swell) Soils 3-123
3.11.3.2 Collapsible Soils 3-123
3.11.3.3 Hydrocompaction 3-124
3.11.3.4 Erosive Soils 3-124
3.11.4 Prime and Unique Farmlands 3-124
3.12 Transportation and Traffic 3-125
3.12.1 Laws, Ordinances, Regulations, and Standards 3-126
3.12.2 Study Area Conditions 3-126
3.12.2.1 Surface Transportation 3-126
3.12.2.2 Air Transportation 3-128
3.12.2.3 Rail Transportation 3-129
3.13 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants 3-129
3.13.1 Laws, Ordinances, Regulations, and Standards 3-129
3.13.2 Vegetation Communities 3-130
3.13.2.1 Creosotebush-White Bursage Desert Scrub 3-131
3.13.2.2 Sonoran Palo Verde-Mixed Cacti Desert Scrub 3-131
3.13.2.3 Sonora-Mojave Mixed Salt Desert Scrub 3-131
3.13.2.4 Barren Land and Open Water 3-132
3.13.2.5 North American Warm Desert Riparian 3-132
3.13.2.6 Apacherian-Chihuahuan Mesquite Upland Scrub 3-133
3.13.3 Special-Status Species 3-133
3.13.4 Invasive and Noxious Plant Species 3-135
3.14 Visual Resources 3-136
3.14.1 Laws, Ordinances, Rules, and Standards 3-136
3.14.2 Visual Resource Inventory 3-137
3.14.3 Visual Resource Management Objectives 3-138
3.14.4 Visual Resources Inventory and Management within the Study Area 3-139
3.14.5 Description of Visual Resources, Sensitive Viewers, and Key Observation Points 3-140
3.14.5.1 Selection of Key Observation Points 3-140
3.14.5.2 Format for Description of Visual Resources 3-140
3.14.5.3 Project Area Overview 3-140
3.14.5.4 Portion Common to All Action Alternatives 3-141
3.14.5.5 Portion Common to the Proposed Action, Alternatives 1, 2, and 3 3-143

3.14.5.6 Portion Common to the Proposed Action, Alternative 1, and Alternative 2 3-146
3.14.5.7 Proposed Action and Alternative 1 3-147
3.14.5.8 Alternative 2 3-153
3.14.5.9 Alternative 3 3-155
3.14.5.10 State Trust Land Route Variation Sub-alternative 3-158
3.15 Water Resources 3-160
3.15.1 Surface Water Resources 3-160
3.15.1.1 Laws, Ordinances, Regulations, and Standards 3-160
3.15.1.2 Climate 3-163
3.15.1.3 Surface Water Conditions 3-163
3.15.1.4 Surface Water Flow and Runoff 3-167
3.15.1.5 Surface Water Quality 3-168
3.15.1.6 Surface Water Use 3-168
3.15.2 Groundwater Resources 3-169
3.15.2.1 Laws, Ordinances, Regulations, and Standards 3-169
3.15.2.2 Groundwater Conditions 3-175
3.15.2.3 Groundwater Use 3-177
3.16 Wildlife Resources, Including Special-Status Wildlife and Migratory Birds 3-178
3.16.1 Laws, Ordinances, Regulations, and Standards 3-178
3.16.2 Field Reconnaissance 3-179
3.16.3 General Wildlife 3-180
3.16.4 Threatened, Endangered, and Special-status Species 3-183
3.16.4.1 Southwestern Willow Flycatcher 3-189
3.16.4.2 Sonoran Desert Tortoise 3-190
3.16.4.3 Bald Eagle 3-191
3.16.4.4 Golden Eagle 3-191
3.16.4.5 Other Special Status Species 3-192
3.16.5 Wildlife Linkages 3-193

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES 4-1

4.1 Introduction 4-1
4.1.1 Impact Assessment 4-1
4.1.1.1 Effects/Impacts 4-1
4.1.1.2 Direct Effects 4-1
4.1.1.3 Indirect Effects 4-1
4.1.1.4 Mitigation for Impacts 4-2
4.1.1.5 Cumulative Effects 4-2
4.1.1.6 Significance 4-2
4.1.1.7 Indicators 4-3
4.1.2 Environmental Effect Categories 4-3
4.1.3 Bradshaw-Harquahala Proposed RMPA 4-3
4.2 Air Quality and Climate Change 4-4
4.2.1 Indicators and Methods 4-4
4.2.2 SIP Conformity 4-5

4.2.3 Direct and Indirect Effects by Alternative 4-6
4.2.3.1 Impacts Common to All Action Alternatives 4-6
4.2.3.2 Proposed Action 4-10
4.2.3.3 Alternative 1: Proposed Action with Additional Corridor 4-14
4.2.3.4 Alternative 2: ROW South of SR 74..... 4-16
4.2.3.5 Alternative 3: Carefree Highway Route..... 4-18
4.2.3.6 State Trust Land Route Variation Sub-alternative 4-20
4.2.3.7 No Action Alternative 4-21
4.2.4 Mitigation and Residual Effects..... 4-22
4.2.5 Unavoidable Adverse Impacts 4-24
4.3 Cultural Resources..... 4-24
4.3.1 Indicators and Methods 4-24
4.3.2 Direct and Indirect Effects by Alternative 4-25
4.3.2.1 Proposed Action 4-25
4.3.2.2 Alternative 1: Proposed Action with Additional Corridor 4-29
4.3.2.3 Alternative 2: ROW South of SR 74..... 4-29
4.3.2.4 Alternative 3: Carefree Highway Route..... 4-29
4.3.2.5 State Trust Land Route Variation Sub-alternative 4-30
4.3.2.6 No Action Alternative 4-31
4.3.3 Mitigation and Residual Effects..... 4-31
4.3.4 Unavoidable Adverse Impacts 4-32
4.4 Geology and Minerals 4-33
4.4.1 Indicators and Methods 4-33
4.4.2 Direct and Indirect Effects by Alternative 4-33
4.4.2.1 Impacts Common to All Action Alternatives 4-33
4.4.2.2 Proposed Action 4-34
4.4.2.3 Alternative 1: Proposed Action with Additional Corridor 4-35
4.4.2.4 Alternative 2: ROW South of SR 74..... 4-36
4.4.2.5 Alternative 3: Carefree Highway Route..... 4-36
4.4.2.6 State Trust Land Route Variation Sub-alternative 4-36
4.4.2.7 No Action Alternative 4-37
4.4.3 Mitigation and Residual Effects..... 4-37
4.4.4 Unavoidable Adverse Impacts 4-37
4.5 Hazardous Materials and Hazardous and Solid Waste 4-37
4.5.1 Indicators and Methods 4-37
4.5.2 Direct and Indirect Effects by Alternative 4-38
4.5.2.1 Impacts Common to All Action Alternatives 4-38
4.5.2.2 Proposed Action 4-40
4.5.2.3 Alternative 1: Proposed Action with Additional Corridor 4-41
4.5.2.4 Alternative 2: ROW South of SR 74..... 4-42
4.5.2.5 Alternative 3: Carefree Highway Route..... 4-42
4.5.2.6 State Trust Land Route Variation Sub-alternative 4-42
4.5.2.7 No Action Alternative 4-42
4.5.3 Mitigation and Residual Effects..... 4-42
4.5.4 Unavoidable Adverse Impacts 4-43

4.6 Land Use and Range Resources....4-43
4.6.1 Indicators and Methods....4-43
4.6.2 Direct and Indirect Effects by Alternative....4-44
4.6.2.1 Impacts Common to All Alternatives....4-52
4.6.2.2 Proposed Action....4-56
4.6.2.3 Alternative 1: Proposed Action with Additional Corridor....4-59
4.6.2.4 Alternative 2: ROW South of SR 74....4-60
4.6.2.5 Alternative 3: Carefree Highway Route....4-62
4.6.2.6 State Trust Land Route Variation Sub-alternative....4-63
4.6.2.7 No Action Alternative....4-64
4.6.3 Mitigation and Residual Effects....4-64
4.6.4 Unavoidable Adverse Impacts....4-65
4.7 Public Health and Safety (Noise, Electromagnetic Fields, and Fire)....4-65
4.7.1 Indicators and Methods....4-65
4.7.1.1 Noise....4-65
4.7.1.2 Electromagnetic Fields....4-65
4.7.1.3 Fire....4-65
4.7.2 Direct and Indirect Effects by Alternative....4-66
4.7.2.1 Impacts Common to All Action Alternatives....4-66
4.7.2.2 Proposed Action....4-68
4.7.2.3 Alternative 1: Proposed Action with Additional Corridor....4-69
4.7.2.4 Alternative 2: ROW South of SR 74....4-70
4.7.2.5 Alternative 3: Carefree Highway Route....4-70
4.7.2.6 State Trust Land Route Variation Sub-alternative....4-71
4.7.2.7 No Action Alternative....4-72
4.7.3 Mitigation and Residual Effects....4-72
4.7.3.1 General....4-72
4.7.3.2 Noise....4-73
4.7.3.3 Fire....4-73
4.7.4 Unavoidable Adverse Impacts....4-74
4.7.4.1 Noise....4-74
4.7.4.2 Fire....4-74
4.8 Paleontology....4-74
4.8.1 Indicators and Methods....4-74
4.8.2 Direct and Indirect Effects by Alternative....4-75
4.8.2.1 Impacts Common to All Action Alternatives....4-75
4.8.2.2 Proposed Action....4-75
4.8.2.3 Alternative 1: Proposed Action with Additional Corridor....4-75
4.8.2.4 Alternative 2: ROW South of SR 74....4-76
4.8.2.5 Alternative 3: Carefree Highway Route....4-76
4.8.2.6 State Trust Land Route Variation Sub-alternative....4-76
4.8.2.7 No Action Alternative....4-76
4.8.3 Mitigation and Residual Effects....4-77
4.8.4 Unavoidable Adverse Impacts....4-77
4.9 Recreation and Special Designations....4-77

4.9.1 Indicators and Methods 4-77
4.9.2 Direct and Indirect Effects by Alternative 4-77
4.9.2.1 Impacts Common to All Action Alternatives 4-77
4.9.2.2 Proposed Action 4-80
4.9.2.3 Alternative 1: Proposed Action with Additional Corridor 4-85
4.9.2.4 Alternative 2: ROW South of SR 74 4-85
4.9.2.5 Alternative 3: Carefree Highway Route 4-87
4.9.2.6 Sub-alternative: State Trust Land Route Variation 4-89
4.9.2.7 No Action Alternative 4-89
4.9.3 Mitigation and Residual Effects 4-89
4.9.4 Unavoidable Adverse Impacts 4-90
4.10 Socioeconomics and Environmental Justice 4-90
4.10.1 Indicators and Methods 4-90
4.10.1.1 Indicators 4-91
4.10.1.2 Methods 4-92
4.10.2 Direct and Indirect Effects by Alternative 4-95
4.10.2.1 Effects Common to All Action Alternatives 4-95
4.10.2.2 Socioeconomics 4-95
4.10.2.3 Environmental Justice 4-120
4.10.2.4 No Action Alternative 4-124
4.10.3 Mitigation and Residual Effects 4-125
4.10.4 Unavoidable Adverse Impacts 4-125
4.11 Soils 4-126
4.11.1 Indicators and Methods 4-126
4.11.2 Direct and Indirect Effects by Alternative 4-126
4.11.2.1 Impacts Common to All Action Alternatives 4-126
4.11.2.2 Proposed Action 4-128
4.11.2.3 Alternative 1: Proposed Action with Additional Corridor 4-128
4.11.2.4 Alternative 2: ROW South of SR 74 4-129
4.11.2.5 Alternative 3: Carefree Highway Route 4-129
4.11.2.6 State Trust Land Route Variation Sub-alternative 4-130
4.11.2.7 No Action Alternative 4-130
4.11.3 Mitigation and Residual Effects 4-130
4.11.4 Unavoidable Adverse Impacts 4-132
4.12 Transportation and Traffic 4-132
4.12.1 Indicators and Methods 4-132
4.12.2 Direct and Indirect Effects by Alternative 4-133
4.12.2.1 Impacts Common to All Action Alternatives 4-133
4.12.2.2 Proposed Action 4-135
4.12.2.3 Alternative 1: Proposed Action with Additional Corridor 4-137
4.12.2.4 Alternative 2: ROW South of SR 74 4-137
4.12.2.5 Alternative 3: Carefree Highway Route 4-137
4.12.2.6 State Trust Lands Route Variation Sub-alternative 4-138
4.12.2.7 No Action Alternative 4-138
4.12.3 Mitigation and Residual Effects 4-138

4.12.4 Unavoidable Adverse Impacts....4-138
4.13 Vegetation Resources, including Noxious and Invasive Weeds and Special Status Plants....4-139
4.13.1 Indicators and Methods....4-139
4.13.1.1 Indicators....4-139
4.13.1.2 Impact Levels....4-139
4.13.2 Direct and Indirect Effects by Alternative....4-141
4.13.2.1 Impacts Common to All Action Alternatives....4-141
4.13.2.2 Proposed Action....4-144
4.13.2.3 Alternative 1: Proposed Action with Additional Corridor....4-144
4.13.2.4 Alternative 2: ROW South of SR 74....4-145
4.13.2.5 Alternative 3: Carefree Highway Route....4-145
4.13.2.6 State Trust Land Route Variation Sub-alternative....4-145
4.13.2.7 No Action Alternative....4-145
4.13.3 Mitigation and Residual Effects....4-146
4.13.3.1 Vegetation Communities....4-146
4.13.3.2 Special Status BLM, USFWS Listed Species, and Arizona Native Plant Law....4-147
4.13.3.3 Invasive and Noxious Plants....4-147
4.13.4 Unavoidable Adverse Impacts....4-147
4.14 Visual Resources....4-148
4.14.1 Indicators and Methods....4-148
4.14.1.1 Indicators....4-148
4.14.1.2 Methods....4-148
4.14.2 Direct and Indirect Effects by Alternative....4-152
4.14.2.1 Impacts Common to All Action Alternatives....4-152
4.14.2.2 Proposed Action....4-157
4.14.2.3 Alternative 1: Proposed Action with Additional Corridor....4-168
4.14.2.4 Alternative 2: ROW South of SR 74....4-168
4.14.2.5 Alternative 3: Carefree Highway Route....4-173
4.14.2.6 State Trust Land Route Variation Sub-alternative....4-176
4.14.2.7 No Action Alternative....4-179
4.14.3 Comparison of Alternatives....4-179
4.14.4 Mitigation and Residual Effects....4-179
4.14.4.1 Micrositing....4-179
4.14.4.2 Structure Type....4-180
4.14.4.3 Color....4-186
4.14.5 Unavoidable Adverse Impacts....4-186
4.15 Water Resources....4-186
4.15.1 Indicators and Methods....4-186
4.15.1.1 Indicators....4-186
4.15.1.2 Methods....4-187
4.15.2 Direct and Indirect Effects by Alternative....4-187
4.15.2.1 Impacts Common to All Action Alternatives....4-187
4.15.2.2 Proposed Action....4-191

4.15.2.3 Alternative 1: Proposed Action with Additional Corridor ... 4-192
4.15.2.4 Alternative 2: ROW South of SR 74 ... 4-193
4.15.2.5 Alternative 3: Carefree Highway Route ... 4-194
4.15.2.6 State Trust Land Route Variation Sub-alternative ... 4-195
4.15.2.7 No Action Alternative ... 4-196
4.15.3 Mitigation and Residual Effects ... 4-197
4.15.4 Unavoidable Adverse Impacts ... 4-197
4.16 Wildlife Resources, including Special Status Wildlife and Migratory Birds 4-197
4.16.1 Indicators and Methods ... 4-197
4.16.1.1 Indicators ... 4-197
4.16.1.2 Impact Levels ... 4-197
4.16.2 Direct and Indirect Effects by Alternative ... 4-198
4.16.2.1 Impacts Common to All Action Alternatives ... 4-198
4.16.2.2 Proposed Action ... 4-205
4.16.2.3 Alternative 1: Proposed Action with Additional Corridor ... 4-206
4.16.2.4 Alternative 2: ROW South of SR 74 ... 4-206
4.16.2.5 Alternative 3: Carefree Highway Route ... 4-207
4.16.2.6 State Trust Land Route Variation Sub-alternative ... 4-207
4.16.2.7 No Action Alternative ... 4-208
4.16.3 Mitigation and Residual Effects ... 4-208
4.16.3.1 Mitigation specific to Sonoran Desert Tortoise ... 4-209
4.16.4 Unavoidable Adverse Impacts ... 4-210
4.17 Irreversible and Irretrievable Commitment of Resources ... 4-211
4.17.1 Air Quality and Climate Change ... 4-211
4.17.2 Cultural Resources ... 4-211
4.17.3 Geology and Minerals ... 4-211
4.17.4 Hazardous Materials and Hazardous and Solid Waste ... 4-212
4.17.5 Land Use and Range Resources ... 4-212
4.17.6 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire) ... 4-212
4.17.7 Paleontology ... 4-212
4.17.8 Recreation and Special Designations ... 4-213
4.17.9 Socioeconomics and Environmental Justice ... 4-213
4.17.10 Soils ... 4-213
4.17.11 Transportation and Traffic ... 4-213
4.17.12 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants ... 4-214
4.17.13 Visual Resources ... 4-214
4.17.14 Water Resources ... 4-214
4.17.15 Wildlife Resources, Including Special Status Wildlife and Migratory Birds ... 4-214
4.18 Relationship of Short-term Uses and Long-term Productivity of Resource 4-215
4.18.1 Air Quality and Climate Change ... 4-215
4.18.2 Cultural Resources ... 4-215
4.18.3 Geology and Minerals ... 4-216

4.18.4 Hazardous Materials and Hazardous and Solid Waste 4-216
4.18.5 Land Use and Range Resources 4-216
4.18.6 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire) 4-216
4.18.7 Paleontology 4-217
4.18.8 Recreation and Special Designations 4-217
4.18.9 Socioeconomics and Environmental Justice 4-217
4.18.10 Soils 4-217
4.18.11 Transportation and Traffic 4-218
4.18.12 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants 4-218
4.18.13 Visual Resources 4-218
4.18.14 Water Resources 4-218
4.18.15 Wildlife Resources, Including Special Status Wildlife and Migratory Birds 4-218
4.19 Cumulative Impacts 4-219
4.19.1 Cumulative Impacts Area 4-219
4.19.2 Past, Present, and Reasonably Foreseeable Actions 4-223
4.19.3 Air Quality and Climate Change 4-224
4.19.4 Cultural Resources.....4-226
4.19.5 Geology and Minerals 4-228
4.19.6 Hazardous Materials and Hazardous and Solid Waste 4-229
4.19.7 Land Use and Range Resources 4-229
4.19.7.1 Land Use.....4-229
4.19.7.2 Range Resources 4-232
4.19.8 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire) 4-233
4.19.8.1 Noise.....4-233
4.19.8.2 EMFs 4-234
4.19.8.3 Fire.....4-234
4.19.9 Paleontology 4-235
4.19.10 Recreation and Special Designations 4-236
4.19.11 Socioeconomics and Environmental Justice 4-237
4.19.12 Soils 4-239
4.19.13 Transportation and Traffic 4-240
4.19.14 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants 4-243
4.19.15 Visual Resources 4-244
4.19.15.1 Visual Resources Focus Area.....4-244
4.19.16 Water Resources 4-248
4.19.16.1 Surface Water 4-249
4.19.16.2 Wetlands.....4-249
4.19.17 Wildlife Resources, Including Special Status Wildlife and Migratory Birds 4-249

CHAPTER 5 CONSULTATION AND COORDINATION 5-1

5.1 Introduction 5-1
5.2 Public Involvement 5-1
5.2.1 Public Scoping Period 5-1
5.2.2 Scoping Meetings 5-3
5.2.3 Scoping Responses 5-5
5.2.3.1 Scoping Period 5-5
5.2.3.2 Comment by Issue 5-5
5.2.3.3 Scoping Report 5-5
5.2.4 Project Status/Update Newsletter 5-6
5.2.5 Draft EIS Distribution 5-6
5.3 Agency Coordination/Consulation 5-7
5.4 Tribal Consultation and Coordination 5-8
5.5 Distribution of the Final EIS 5-10
5.6 Record of Decision 5-10
5.7 List of Preparers and Reviewers 5-11
5.8 Third Party Contractor - JBR Environmental Consultants 5-12

CHAPTER 6 DEIS COMMENTS AND RESPONSES 6-1

6.1 Introduction 6-1
6.2 Response to Comments 6-1

CHAPTER 7 REFERENCES, ACRONYMS, ABBREVIATIONS, GLOSSARY, AND INDEX 7-1

7.1 References 7-1
7.2 Acronyms and Abbreviations 7-32
7.3 Glossary 7-42
7.4 Index 7-54

LIST OF TABLES

Table 1.5-1 Decisions to be Made 1-9
Table 1.5-2 Federal Laws, Statutes, Regulations, and Executive Orders with which the Proposed Action and All Action Alternatives Must Conform 1-13
Table 1.5-3 Summary of Potentially Required Local, State, or Federal Permits, Licenses, or Authorizations 1-16
Table 1.7-1 Formal Scoping Meeting Dates, Times, Locations, and Attendees 1-21
Table 1.8-1 Number of Scoping Comments Received by Issue 1-22
Table 1.8-2 Summary of Issues from Scoping 1-23
Table 1.9-1 Organization of the Final EIS and Proposed RMPA 1-27
Table 2.4-1 Design Characteristics of the Transmission Line 2-6
Table 2.4-2 Construction Schedule 2-10
Table 2.4-3 Typical Transmission Line Construction Personnel and Equipment 2-11
Table 2.4-4 Proposed Action Temporary Disturbance Estimates 2-18
Table 2.4-5 Minimum Safe Clearance Zone at the Time of Maintenance 2-22
Table 2.4-6 NERC Arcing/Flashover Conditions Clearance 2 Distances 2-22
Table 2.4-7 Proposed Action Permanent Disturbance Estimates 2-23
Table 2.5-1 Alternative 2 Temporary Disturbance Estimates 2-27
Table 2.5-2 Alternative 2 Permanent Disturbance Estimates 2-27
Table 2.5-3 Alternative 3 Temporary Disturbance Estimates 2-29
Table 2.5-4 Alternative 3 Permanent Disturbance Estimates 2-29
Table 2.7-1 Summary of Options and Route Screening Results for Eliminated Alternatives 2-60
Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives 2-71
Table 3.2-1 Meteorological Conditions Near the Project Area 3-7
Table 3.2-2 National Ambient Air Quality Standards 3-10
Table 3.2-3 Summary of Monitoring Network Data at Selected Sites 3-18
Table 3.3-1 Known Cultural Resource Sites along the Proposed Action and Action Alternative Routes, including the Sub-alternative 3-31
Table 3.3-2 Cultural Resources Potentially Sensitive to Visual Impacts 3-36
Table 3.4-1 Study Area Geologic Unit Symbol, Description, and Age 3-40
Table 3.6-1 Surface Management and Ownership within the Study Area 3-52
Table 3.6-2 Planned Residential Developments within the Study Area 3-57
Table 3.6-3 ROWs Crossed by the Proposed Action and Action Alternatives 3-61
Table 3.6-4 BLM and State Trust Land Grazing Allotments within the Study Area 3-64
Table 3.7-1 Sound Pressure Levels of Typical Noise Sources and Noise Environments 3-69

Table 3.7-2 Proximity of Project Alternatives and Anticipated Dominant Existing Ambient Noise Sources to Identified Residential Communities in Study Area 3-70
Table 3.7-3 Sample Long-term Measurements from Previous Ambient Sound Surveys 3-72
Table 3.7-4 IEEE Magnetic Field Exposure Levels for the General Public 3-73
Table 3.7-5 Summary of ICNIRP EMF Exposure Limits 3-74
Table 3.7-6 Example EMF Sources 3-81
Table 3.7-7 Comparison of APS Projected EMFs to ICNIRP Limits 3-82
Table 3.9-1 Visitation Statistics for The Boulders Staging Area 3-97
Table 3.9-2 Preliminary Route Designations within the Study Area 3-98
Table 3.10-1 Population and Population Growth 3-101
Table 3.10-2 Employment and Earnings by Industry Sector for 2001 and 20093-102
Table 3.10-3 Number Employed and Unemployment Rate 3-103
Table 3.10-4 Housing Values 2000 and 2005-2009 3-104
Table 3.10-5 Average Property Tax Rate Calculations (Percent) 3-105
Table 3.10-6 Private Land Characteristics 3-106
Table 3.10-7 Minority Representation by Race and Ethnicity – 2010 3-112
Table 3.10-8 Poverty and Household Income (2005-2009) 3-114
Table 3.10-9 Poverty Thresholds for 2009 by Size of Family and Number of Related Children Under 18 Years 3-115
Table 3.10-10 Minority and Low-Income Percentages in the Three-Mile Study Area 3-117
Table 3.11-1 Total Acreage of Each Soil Type Within 0.5-mile of All Action Alternative Routes 3-119
Table 3.11-2 Reclamation Suitability and Erosion Potential 3-121
Table 3.12-1 Regional Highways Annual Average Daily Traffic within the Study Area 3-127
Table 3.13-1 Vegetation Communities and Land Cover (in acres) 3-130
Table 3.13-2 Special Status Plant Species 3-133
Table 3.15-1 Waters of the U.S. within the Study Area 3-167
Table 3.15-2 Surface Water Points of Diversions and POUs within a 1-Mile Radius of the Proposed Action and Action Alternative Routes ... 3-170
Table 3.16-1 Special Status Wildlife Species 3-183
Table 3.16-2 AGFD Southwestern Willow Flycatcher Survey Results 3-190
Table 3.16-3 Acres of Desert Tortoise Habitat by Category within the Study Area 3-191
Table 4.1-1 Summary of Terms Used to Describe Effects in the EIS 4-3
Table 4.2-1 Commuter Vehicle Distribution 4-8
Table 4.2-2 Maximum Monthly Construction Emission Rates - Proposed Action 4-9
Table 4.2-3 Total Construction Related GHG Emissions (as CO_2e) - Proposed Action 4-10
Table 4.2-4 Wind Erosion Emissions (TONS/YR) - Proposed Action 4-14

Table 4.2-5 Operational Phase Vehicular Emissions (TONS/YR) - Proposed Action 4-14
Table 4.2-6 Maximum Monthly Construction Emission Rates – Alternative 1 ..4-15
Table 4.2-7 Maximum Monthly Construction Emission Rates – Alternative 2 ..4-17
Table 4.2-8 Wind Erosion Emissions (TONS/YR) – Alternative 2 4-17
Table 4.2-9 Maximum Monthly Construction Emission Rates – Alternative 3 ..4-19
Table 4.2-10 Wind Erosion Emissions (TONS/YR) – Alternative 3 4-19
Table 4.2-11 Maximum Monthly Construction Emission Rates – State Trust Land Route Variation Sub-Alternative 4-21
Table 4.3-1 Visual Impacts....4-28
Table 4.3-2 Known Cultural Resource Sites along Potential Alignment Shift...4-32
Table 4.5-1 Possible Hazardous Materials Used in the Project....4-39
Table 4.6-1 Description of Land Use and Range Resources Effects Levels 4-44
Table 4.6-2 Surface Management Crossed by the Action Alternatives (miles).4-45
Table 4.6-3 Jurisdiction Crossed by the Action Alternatives (miles)....4-45
Table 4.6-4 Existing and Future Land Use Crossed by the Action Alternatives (miles)....4-46
Table 4.6-5 BLM Rights-of-Way Crossed by the Action Alternatives 4-47
Table 4.6-6 Grazing Allotments Crossed by the Action Alternatives (miles).....4-48
Table 4.6-7 AUMs on Grazing Allotments Crossed by the Action Alternatives.4-49
Table 4.6-8 AUMs Removed from Production in the Short Term by the Action Alternatives 4-50
Table 4.6-9 AUMs Removed from Production in the Long Term by the Action Alternatives 4-51
Table 4.6-10 Acres of Grazing Allotments Removed from Production in the Short Term 4-54
Table 4.6-11 Acres of Grazing Allotments Removed from Production in the Long Term....4-55
Table 4.9-1 Description of Recreation and Special Designations Effects Levels....4-78
Table 4.10-1 Construction Cost Estimates....4-96
Table 4.10-2 Economic Impacts of Construction: 2013-2016....4-97
Table 4.10-3 Private Property that would be Affected by the Proposed Action ..4-98
Table 4.10-4 Planned Development Acreages Potentially Affected by the Proposed Action by Land Use Type....4-100
Table 4.10-5 Estimated Annual Property Tax Revenues from Project Lands by Jurisdiction 4-101
Table 4.10-6 State Trust Land Characteristics....4-102
Table 4.10-7 Economic Impacts of Construction: 2013-2016....4-108
Table 4.10-8 Private Property that would be Affected by Alternative 2 4-109
Table 4.10-9 Saddleback Heights Planned Development Acreages Potentially Affected by the Alternative 2 by Land Use Type 4-109
Table 4.10-10 Private Property that would be Affected by Alternative 3 4-112
Table 4.10-11 Planned Development Acreages Potentially Affected by Alternative 3 by Land Use Type 4-114

Table 4.10-12 Economic Impacts of Construction, State Trust Lands Route Variation Sub-alternative: 2013-2016 4-117
Table 4.10-13 Comparison of Mileage of ROW Crossing or Adjoining Private Property Within and Outside the Environmental Justice Community..... 4-122
Table 4.12-1 Description of Transportation and Traffic Effects Levels..... 4-132
Table 4.12-2 Effect of Construction Traffic on Existing Annual Average Daily Traffic..... 4-135
Table 4.13-1 Description of Effect Magnitude Criteria with regard to Vegetation Resources 4-139
Table 4.14-1 Degree of Contrast Criteria..... 4-149
Table 4.14-2 Summary of Terms Used to Describe Visual Effects 4-150
Table 4.14-3 Comparison of Visual Resource Impacts by Alternative 4-181
Table 4.16-1 Description of Effect Magnitude Criteria with regard to Wildlife Resources..... 4-198
Table 4.16-2 Summary of Impacts to Special Status Species 4-200
Table 4.19-1 Cumulative Impacts Areas by Resource and Rationale..... 4-219
Table 4.19-2 Land Ownership by CIA..... 4-222
Table 4.19-3 Potential Quantifiable Permanent Disturbance from Reasonably Foreseeable Projects within the Two-Mile CIA 4-223
Table 4.19-4 Existing Quantifiable Land Uses in Two-Mile CIA..... 4-226
Table 4.19-5 Planned Residential Developments within the CIA..... 4-231
Table 4.19-6 Regional Highways Annual Average Daily Traffic within the CIA 4-240
Table 5.2-1 Scoping Legal Notice and News Release Distribution..... 5-1
Table 5.2-2 Formal Scoping Meeting Dates, Times, Locations, and Attendees..... 5-4
Table 5.2-3 Number of Scoping Comments Received by Source..... 5-5
Table 5.2-4 Number of Scoping Comments Received by Issue..... 5-5
Table 5.4-1 Native American Tribe/Tribal Organizations Consulted 5-9
Table 5.7-1 Interdisciplinary Team and Specialists..... 5-11
Table 5.8-1 Third Party Contractor – JBR Environmental Consultants 5-12
Table 6.2-1 Public Comments and BLM Response 6-5

VOLUME II

LIST OF APPENDICES

APPENDIX 2A Best Management Practices

APPENDIX 2B Description of APS' Transmission Vegetation Management Program

APPENDIX 3A Literature Review for Transmission Line and Housing Value Studies

APPENDIX 4A Visual Contrast Rating Forms

APPENDIX 4B Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities

APPENDIX 6A List of Interested Parties that Signed Form Letters

LIST OF FIGURES

Figure 1.1-1 Project Location Map

Figure 2.4-1a Proposed Action Route

Figure 2.4-1b Proposed Action - RMP Amendments

Figure 2.4-2 Typical 500/230 kV Tangent Pole

Figure 2.4-3 Typical 500/230 kV Line Angle Poles

Figure 2.4-4 Typical 500/230 kV H-Frame Structures

Figure 2.4-5 Double Circuit 500/230 kV Tangent Lattice Poles

Figure 2.4-6 Basic Wire Handling Equipment

Figure 2.5-1a Action Alternatives

Figure 2.5-1b Alternative 1 - RMP Amendments

Figure 2.5-1c Alternative 2 - RMP Amendments

Figure 2.7-1 Cloud Road Route, Hassayampa-Western SR 74 Route, Hassayampa-Joy Ranch Road Route, CAP Complete Route - Considered but Eliminated from Detailed Analysis

Figure 2.7-2 CAP Widths

Figure 2.7-3 LAFB Auxiliary Field #1 Bypass Route, Options A, B, and C Considered but Eliminated from Detailed Analysis

Figure 2.7-4 Vistancia Bypass Route, Options A, B, and C Considered but Eliminated from Detailed Analysis

Figure 2.7-5 Westwing/Navajo Corridor Route and CAP to Grand Avenue Route Considered but Eliminated from Detailed Analysis
Figure 2.7-6 Westwing Area Crossings and Constraints
Figure 2.7-7 Trilby Wash Area Crossings and Constraints
Figure 2.7-8 McMicken Area Crossings and Constraints
Figure 2.7-9 Morgan Area Crossings and Constraints
Figure 2.7-10 Westwing/Grand Avenue-Navajo 500/230kV Separation Route, Options A, B, and C, and Wittmann/Circle City Bypass Route Considered but Eliminated from Detailed Analysis
Figure 2.7-11 HPFF Cable Cross Section
Figure 2.7-12 Typical XLPE Vault Installation
Figure 2.7-13 XLPE Cable Cross Section
Figure 2.7-14 Typical Overhead to Underground Transition Station
Figure 2.10-1 Preferred Alternative - RMP Amendments
Figure 3.2-1 Non-attainment and Attainment with Maintenance Plan Areas
Figure 3.2-2 PM10 Non-attainment Area
Figure 3.2-3 Recommended 8-Hour Ozone Non-attainment Area
Figure 3.2-4 Arizona Class I Areas
Figure 3.4-1 Geologic Map of the Study Area
Figure 3.4-2 Mineral Restrictions
Figure 3.4-3 Mineral Data and Mine Sites
Figure 3.5-1 Hazardous Material Sites
Figure 3.6-1 Jurisdiction
Figure 3.6-2 Future Planned Land Use
Figure 3.6-3 Existing Land Use
Figure 3.6-4 Livestock Grazing
Figure 3.7-1 Fire History
Figure 3.7-2 Vegetation Condition Classes
Figure 3.9-1 Recreation Opportunity Spectrum
Figure 3.9-2 Special Designations and Special Recreation Management Areas
Figure 3.9-3 Route Designations
Figure 3.10-1 Environmental Justice and Communities

Figure 3.11-1 Soil Units
Figure 3.11-2 Soil Hazards
Figure 3.12-1 Transportation and Traffic
Figure 3.13-1 Vegetation Communities
Figure 3.14-1 Scenic Quality Ratings
Figure 3.14-2 Viewer Sensitivity
Figure 3.14-3 VRI Classification
Figure 3.14-4 KOPs and VRM Classes
Figure 3.14-5 Existing Conditions from Key Observation Point 5
Figure 3.14-6 Existing Conditions from Key Observation Point 6
Figure 3.14-7 Existing Conditions from Key Observation Point 8
Figure 3.15-1 Surface Water Resources
Figure 3.15-2 Groundwater Resources
Figure 3.16-1 Special Status Species Potential Suitable Habitat
Figure 4.9-1 Proposed Access Roads, Upgrade Locations, and OHV Single-track Trails
Figure 4.14-1a Existing Conditions from Key Observation Point 1
Figure 4.14-1b Simulation Common to All Alternatives from Key Observation Point 1
Figure 4.14-2a Existing Conditions from Key Observation Point 2
Figure 4.14-2b Simulation Common to All Alternatives from Key Observation Point 2
Figure 4.14-3a Existing Conditions from Key Observation Point 3
Figure 4.14-3b Simulation Common to All Alternatives from Key Observation Point 3
Figure 4.14-4a Existing Conditions from Key Observation Point 4
Figure 4.14-4b Simulation Common to All Alternatives from Key Observation Point 4
Figure 4.14-5a Existing Conditions from Key Observation Point 7
Figure 4.14-5b Simulation Common to All Alternatives from Key Observation Point 7
Figure 4.14-5c Simulation of Sub-Alternative from Key Observation Point 7
Figure 4.14-6 Viewshed Analysis Proposed Action - Visual Resources Focus Area
Figure 4.14-7a Existing Conditions from Key Observation Point 17b
Figure 4.14-7b Simulation of Proposed Action from Key Observation Point 17b
Figure 4.14-8 Easternmost Crossing Viewshed - Visual Resources Focus Area

Figure 4.14-9a Existing Conditions from Key Observation Point 17c
Figure 4.14-9b Simulation of Proposed Action from Key Observation Point 17c
Figure 4.14-10a Existing Conditions from Key Observation Point 18b
Figure 4.14-10b Simulation of Proposed Action from Key Observation Point 18b
Figure 4.14-11 Westernmost Crossing Viewshed - Visual Resources Focus Area
Figure 4.14-12a Existing Conditions from Key Observation Point 18c
Figure 4.14-12b Simulation of Proposed Action from Key Observation Point 18c
Figure 4.14-13 Proposed Action - Area of Viewshed Dominance
Figure 4.14-14a Existing Conditions from Key Observation Point 10
Figure 4.14-14b Simulation of Proposed Action and Alternative 2 from Key Observation Point 10
Figure 4.14-15a Existing Conditions from Key Observation Point 12
Figure 4.14-15b Simulation of Proposed Action from Key Observation Point 12
Figure 4.14-16a Existing Conditions from Key Observation Point 13
Figure 4.14-16b Simulation of Proposed Action from Key Observation Point 13
Figure 4.14-16c Simulation of Alternative 2 from Key Observation Point 13
Figure 4.14-17a Existing Conditions from Key Observation Point 20
Figure 4.14-17b Simulation of Proposed Action and Alternative 2 from Key Observation Point 20
Figure 4.14-18a Existing Conditions from Key Observation Point 11
Figure 4.14-18b Simulation of Proposed Action from Key Observation Point 11
Figure 4.14-18c Simulation of Alternative 2 from Key Observation Point 11
Figure 4.14-19a Existing Conditions from Key Observation Point 19
Figure 4.14-19b Simulation of Proposed Action and Alternative 2 from Key Observation Point 19
Figure 4.14-20a Existing Conditions from Key Observation Point 16
Figure 4.14-20b Simulation of Proposed Action and Alternative 2 from Key Observation Point 16
Figure 4.14-21 Viewshed Analysis Alternative 2 - Visual Resources Focus Area
Figure 4.14-22 Alternative 2 - Area of Viewshed Dominance
Figure 4.14-23a Existing Conditions from Key Observation Point 17d
Figure 4.14-23b Simulation of Alternative 2 from Key Observation Point 17d

Figure 4.14-24a Existing Conditions from Key Observation Point 18d
Figure 4.14-24b Simulation of Alternative 2 from Key Observation Point 18d
Figure 4.14-25 Viewshed Analysis Alternative 3 - Visual Resources Focus Area
Figure 4.14-26a Existing Conditions from Key Observation Point 9
Figure 4.14-26b Simulation of Alternative 3 from Key Observation Point 9
Figure 4.14-27a Existing Conditions from Key Observation Point 14
Figure 4.14-27b Simulation of Alternative 3 from Key Observation Point 14
Figure 4.14-28a Existing Conditions from Key Observation Point 15
Figure 4.14-28b Simulation of Alternative 3 from Key Observation Point 15
Figure 4.14-29a Existing Conditions from Key Observation Point 21
Figure 4.14-29b Simulation of Sub-Alternative from Key Observation Point 21
Figure 4.14-30a Existing Conditions from Key Observation Point 22
Figure 4.14-30b Simulation of Sub-Alternative from Key Observation Point 22
Figure 4.19-1 Air Quality Cumulative Impacts Area
Figure 4.19-2 2-Mile Buffer Cumulative Impacts Area
Figure 4.19-3 Range Resources Cumulative Impacts Area
Figure 4.19-4 Socioeconomics and Environmental Justice Cumulative Impacts Area
Figure 4.19-5 Visual Resources Cumulative Impacts Area

TABLE OF CONTENTS – VOLUME II

APPENDICES

APPENDIX 2A Best Management Practices

APPENDIX 2B Description of APS' Transmission Vegetation Management Program

APPENDIX 3A Literature Review for Transmission Line and Housing Value Studies

APPENDIX 4A Visual Contrast Rating Forms

APPENDIX 4B Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities

APPENDIX 6A List of Interested Parties that Signed Form Letters

LIST OF FIGURES

Figure 1.1-1 Project Location Map
Figure 2.4-1a Proposed Action Route
Figure 2.4-1b Proposed Action - RMP Amendments
Figure 2.4-2 Typical 500/230 kV Tangent Pole
Figure 2.4-3 Typical 500/230 kV Line Angle Poles
Figure 2.4-4 Typical 500/230 kV H-Frame Structures
Figure 2.4-5 Double Circuit 500/230 kV Tangent Lattice Poles
Figure 2.4-6 Basic Wire Handling Equipment
Figure 2.5-1a Action Alternatives
Figure 2.5-1b Alternative 1 - RMP Amendments
Figure 2.5-1c Alternative 2 - RMP Amendments
Figure 2.7-1 Cloud Road Route, Hassayampa-Western SR 74 Route, Hassayampa-Joy Ranch Road Route, CAP Complete Route - Considered but Eliminated from Detailed Analysis
Figure 2.7-2 CAP Widths
Figure 2.7-3 LAFB Auxiliary Field #1 Bypass Route, Options A, B, and C Considered but Eliminated from Detailed Analysis
Figure 2.7-4 Vistancia Bypass Route, Options A, B, and C Considered but Eliminated from Detailed Analysis
Figure 2.7-5 Westwing/Navajo Corridor Route and CAP to Grand Avenue Route Considered but Eliminated from Detailed Analysis
Figure 2.7-6 Westwing Area Crossings and Constraints
Figure 2.7-7 Trilby Wash Area Crossings and Constraints
Figure 2.7-8 McMicken Area Crossings and Constraints

Figure 2.7-9	Morgan Area Crossings and Constraints
Figure 2.7-10	Westwing/Grand Avenue-Navajo 500/230kV Separation Route, Options A, B, and C, and Wittmann/Circle City Bypass Route Considered but Eliminated from Detailed Analysis
Figure 2.7-11	HPFF Cable Cross Section
Figure 2.7-12	Typical XLPE Vault Installation
Figure 2.7-13	XLPE Cable Cross Section
Figure 2.7-14	Typical Overhead to Underground Transition Station
Figure 2.10-1	Preferred Alternative - RMP Amendments
Figure 3.2-1	Non-attainment and Attainment with Maintenance Plan Areas
Figure 3.2-2	PM10 Non-attainment Area
Figure 3.2-3	Recommended 8-Hour Ozone Non-attainment Area
Figure 3.2-4	Arizona Class I Areas
Figure 3.4-1	Geologic Map of the Study Area
Figure 3.4-2	Mineral Restrictions
Figure 3.4-3	Mineral Data and Mine Sites
Figure 3.5-1	Hazardous Material Sites
Figure 3.6-1	Jurisdiction
Figure 3.6-2	Future Planned Land Use
Figure 3.6-3	Existing Land Use
Figure 3.6-4	Livestock Grazing
Figure 3.7-1	Fire History
Figure 3.7-2	Vegetation Condition Classes
Figure 3.9-1	Recreation Opportunity Spectrum
Figure 3.9-2	Special Designations and Special Recreation Management Areas
Figure 3.9-3	Route Designations
Figure 3.10-1	Environmental Justice and Communities
Figure 3.11-1	Soil Units
Figure 3.11-2	Soil Hazards
Figure 3.12-1	Transportation and Traffic
Figure 3.13-1	Vegetation Communities
Figure 3.14-1	Scenic Quality Ratings
Figure 3.14-2	Viewer Sensitivity
Figure 3.14-3	VRI Classification
Figure 3.14-4	KOPs and VRM Classes
Figure 3.14-5	Existing Conditions from Key Observation Point 5
Figure 3.14-6	Existing Conditions from Key Observation Point 6
Figure 3.14-7	Existing Conditions from Key Observation Point 8
Figure 3.15-1	Surface Water Resources
Figure 3.15-2	Groundwater Resources
Figure 3.16-1	Special Status Species Potential Suitable Habitat

Figure 4.9-1	Proposed Access Roads, Upgrade Locations, and OHV Single-track Trails
Figure 4.14-1a	Existing Conditions from Key Observation Point 1
Figure 4.14-1b	Simulation Common to All Alternatives from Key Observation Point 1
Figure 4.14-2a	Existing Conditions from Key Observation Point 2
Figure 4.14-2b	Simulation Common to All Alternatives from Key Observation Point 2
Figure 4.14-3a	Existing Conditions from Key Observation Point 3
Figure 4.14-3b	Simulation Common to All Alternatives from Key Observation Point 3
Figure 4.14-4a	Existing Conditions from Key Observation Point 4
Figure 4.14-4b	Simulation Common to All Alternatives from Key Observation Point 4
Figure 4.14-5a	Existing Conditions from Key Observation Point 7
Figure 4.14-5b	Simulation Common to All Alternatives from Key Observation Point 7
Figure 4.14-5c	Simulation of Sub-Alternative from Key Observation Point 7
Figure 4.14-6	Viewshed Analysis Proposed Action - Visual Resources Focus Area
Figure 4.14-7a	Existing Conditions from Key Observation Point 17b
Figure 4.14-7b	Simulation of Proposed Action from Key Observation Point 17b
Figure 4.14-8	Easternmost Crossing Viewshed - Visual Resources Focus Area
Figure 4.14-9a	Existing Conditions from Key Observation Point 17c
Figure 4.14-9b	Simulation of Proposed Action from Key Observation Point 17c
Figure 4.14-10a	Existing Conditions from Key Observation Point 18b
Figure 4.14-10b	Simulation of Proposed Action from Key Observation Point 18b
Figure 4.14-11	Westernmost Crossing Viewshed - Visual Resources Focus Area
Figure 4.14-12a	Existing Conditions from Key Observation Point 18c
Figure 4.14-12b	Simulation of Proposed Action from Key Observation Point 18c
Figure 4.14-13	Proposed Action - Area of Viewshed Dominance
Figure 4.14-14a	Existing Conditions from Key Observation Point 10
Figure 4.14-14b	Simulation of Proposed Action and Alternative 2 from Key Observation Point 10
Figure 4.14-15a	Existing Conditions from Key Observation Point 12
Figure 4.14-15b	Simulation of Proposed Action from Key Observation Point 12
Figure 4.14-16a	Existing Conditions from Key Observation Point 13
Figure 4.14-16b	Simulation of Proposed Action from Key Observation Point 13
Figure 4.14-16c	Simulation of Alternative 2 from Key Observation Point 13
Figure 4.14-17a	Existing Conditions from Key Observation Point 20
Figure 4.14-17b	Simulation of Proposed Action and Alternative 2 from Key Observation Point 20
Figure 4.14-18a	Existing Conditions from Key Observation Point 11
Figure 4.14-18b	Simulation of Proposed Action from Key Observation Point 11
Figure 4.14-18c	Simulation of Alternative 2 from Key Observation Point 11
Figure 4.14-19a	Existing Conditions from Key Observation Point 19

Figure 4.14-19b Simulation of Proposed Action and Alternative 2 from Key Observation Point 19
Figure 4.14-20a Existing Conditions from Key Observation Point 16
Figure 4.14-20b Simulation of Proposed Action and Alternative 2 from Key Observation Point 16
Figure 4.14-21 Viewshed Analysis Alternative 2 - Visual Resources Focus Area
Figure 4.14-22 Alternative 2 - Area of Viewshed Dominance
Figure 4.14-23a Existing Conditions from Key Observation Point 17d
Figure 4.14-23b Simulation of Alternative 2 from Key Observation Point 17d
Figure 4.14-24a Existing Conditions from Key Observation Point 18d
Figure 4.14-24b Simulation of Alternative 2 from Key Observation Point 18d
Figure 4.14-25 Viewshed Analysis Alternative 3 - Visual Resources Focus Area
Figure 4.14-26a Existing Conditions from Key Observation Point 9
Figure 4.14-26b Simulation of Alternative 3 from Key Observation Point 9
Figure 4.14-27a Existing Conditions from Key Observation Point 14
Figure 4.14-27b Simulation of Alternative 3 from Key Observation Point 14
Figure 4.14-28a Existing Conditions from Key Observation Point 15
Figure 4.14-28b Simulation of Alternative 3 from Key Observation Point 15
Figure 4.14-29a Existing Conditions from Key Observation Point 21
Figure 4.14-29b Simulation of Sub-Alternative from Key Observation Point 21
Figure 4.14-30a Existing Conditions from Key Observation Point 22
Figure 4.14-30b Simulation of Sub-Alternative from Key Observation Point 22
Figure 4.19-1 Air Quality Cumulative Impacts Area
Figure 4.19-2 2-Mile Buffer Cumulative Impacts Area
Figure 4.19-3 Range Resources Cumulative Impacts Area
Figure 4.19-4 Socioeconomics and Environmental Justice Cumulative Impacts Area
Figure 4.19-5 Visual Resources Cumulative Impacts Area

TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION, PURPOSE AND NEED 1-1

1.1 Introduction 1-1
1.1.1 Project Overview 1-1
1.1.2 Project History 1-2
1.2 Applicant's Objective 1-6
1.3 BLM's Purpose and Need 1-7
1.3.1 Purpose of the BLM Action 1-7
1.3.2 Need for the BLM Action 1-7
1.4 Lead and Cooperating Agencies 1-8
1.5 Regulatory Framework 1-8
1.5.1 NEPA and Plan Amendment Process 1-8
1.5.2 Relationship to Policies, Plans, and Programs 1-10
1.5.3 Applicable Laws and Regulations 1-13
1.5.4 Permits Required or Potentially Required 1-14
1.6 Tribal Consultation and Coordination 1-18
1.7 Scoping and Public Involvement 1-19
1.7.1 Federal Register Notice of Intent 1-19
1.7.2 Mailings, Posters, and Email Notifications 1-19
1.7.3 Media Contacts 1-20
1.7.4 Public Scoping Meetings 1-20
1.8 Issues Identified During Scoping 1-21
1.9 Organization of the EIS 1-27

LIST OF TABLES

Table 1.5-1 Decisions to be Made 1-9
Table 1.5-2 Federal Laws, Statutes, Regulations, and Executive Orders with which the Proposed Action and All Action Alternatives Must Conform 1-13
Table 1.5-3 Summary of Potentially Required Local, State, or Federal Permits, Licenses, or Authorizations 1-16
Table 1.7-1 Formal Scoping Meeting Dates, Times, Locations, and Attendees . 1-21
Table 1.8-1 Number of Scoping Comments Received by Issue 1-22
Table 1.8-2 Summary of Issues from Scoping 1-23
Table 1.9-1 Organization of the Final EIS and Proposed RMPA 1-27

This page intentionally left blank.

CHAPTER 1 INTRODUCTION, PURPOSE AND NEED

1.1 INTRODUCTION

1.1.1 Project Overview

Arizona Public Service Company (APS or Applicant) is proposing the development of approximately 38 miles of transmission line to increase the reliability of the high-voltage transmission system in the northwestern Phoenix metropolitan area. The proposed APS Sun Valley to Morgan 500/230kV Transmission Line Project (Proposed Action or Project) would establish a 500 Kilovolt (kV) and 230kV connection, constructed mainly on single-pole structures between two substations (the Sun Valley Substation [formerly called TS-5] and the existing Morgan Substation [formerly called TS-9]). The approved Sun Valley Substation will be located in the northwest portion of the Town of Buckeye and the existing Morgan Substation is located in the City of Peoria. Generally the transmission line would head north-northeast out of the Sun Valley Substation to north of State Route (SR) 74 and then east to the Morgan Substation. The Project location is shown in **Figure 1.1-1 (**found in the Figures section of Volume II).

The Project would require a new right-of-way (ROW) or easement on federal, state, and private lands. The construction ROW would be approximately 200 feet wide, but could be somewhat wider where terrain poses engineering or construction constraints. The permanent and operational ROW width is proposed to be 200 feet wide and would cross approximately seven miles of public lands, north and south of SR 74 in the northeastern part of the Project Area and approximately two miles of public lands in the southwestern portion of the Project Area near the Sun Valley Substation location (**Figure 1.1-1**). Because the ROW over public lands is needed to complete APS' proposed Project, which spans approximately 38 miles on mostly non-public lands, the National Environmental Policy Act (NEPA) requires analysis of the entire transmission line route, including impacts to non-public lands. However, any decision issued by the Bureau of Land Management Hassayampa Field Office (BLM HFO) would only affect that portion of the Project occurring on BLM-managed public lands. The transmission line may include steel monopole, H-frame, or lattice structures. Typical structure heights would be between 135 and 195 feet tall with spans between structures typically ranging from 800 to 1,400 feet, depending on terrain or other considerations. Until final design and the specific ROW are determined, actual structure types and locations cannot be specifically identified.

The BLM HFO has determined that the Project may also require approval of an amendment to the Bradshaw-Harquahala Resource Management Plan (RMP) in addition to a ROW application approval. In order to comply with its requirements under NEPA, the BLM has determined that this Environmental Impact Statement (EIS) will be prepared for the Project because it is a major federal action.

1.1.2 Project History

Population growth and continued expansion of urban development into previously undeveloped areas in Arizona have increased the demand for electric transmission resources. According to the United States (U.S.) Census Bureau (2012a), Arizona's population increased by 24.5 percent between 2000 and 2010. This growth rate is second only to Nevada, which showed a 35 percent increase over that same time period. In response to this trend, APS identified a need for added electric transmission capacity to relieve transmission congestion, improve the reliability of the transmission network, and provide power to expanding urban areas.

In order to proceed with the next steps in trying to fulfill the identified need for added electric transmission capacity, APS initiated the applicable siting processes established by the Arizona State Legislature (Legislature). The Legislature established the Arizona Corporation Commission (ACC), which has jurisdiction over the quality of service and rates charged by public service utilities. The Arizona Revised Statutes (ARS) in Section 40-360 *et seq.* established a siting process requiring, "Every utility planning to construct a…transmission line…in this state shall first file with the commission an application for a Certificate of Environmental Compatibility" (CEC; Arizona State Legislature 2007a).

The Arizona Power Plant and Transmission Line Siting Committee (Siting Committee) was created by the Legislature to, "…provide a single forum for the expeditious resolution of all matters concerning the location of electric generating plants and transmission lines in a single proceeding to which access will be open to interested and affected individuals, groups, county and municipal governments, and other public bodies to participate in these decisions." The Siting Committee is composed of eleven members representing various state agencies and local interests as well as some at large members. During public hearings, the Siting Committee considers the matters contained in the utility's application for the CEC. Following these deliberations, the Siting Committee issues or denies a CEC. The ACC reviews the Siting Committee's decision, and may accept, reject, or modify the CEC (ACC 2010). Upon receipt of a final decision from the ACC, the utility may proceed with construction (Provided all land owner issues are resolved).

The ARS provide a list of factors that are to be considered by the ACC in issuing a CEC:

1. Existing plans of the state, local government and private entities for other developments at or in the vicinity of the proposed site.
2. Fish, wildlife and plant life and associated forms of life on which they are dependent.
3. Noise emission levels and interference with communication signals.
4. The proposed availability of the site to the public for recreational purposes, consistent with safety considerations and regulations.
5. Existing scenic areas, historic sites and structures or archaeological sites at or in the vicinity of the proposed site.
6. The total environment of the area.

7. The technical practicality of achieving a proposed objective and the previous experience with equipment and methods available for achieving a proposed objective.
8. The estimated cost of the facilities and site as proposed by the applicant and the estimated cost of the facilities and site as recommended by the Committee, recognizing that any significant increase in costs represents a potential increase in the cost of electric energy to the customers or the applicant.
9. Any additional factors that require consideration under applicable federal and state laws pertaining to any such site (Arizona State Legislature 2007b).

It should be noted that federal land management plans are not explicitly listed among the factors, but factor 9 does include reference to consideration of applicable federal law and the Siting Committee and the ACC were both aware of the federal jurisdiction over a portion of the approved route. In addition, the ARS does provide the requirement for the ACC to consider "The total environment of the area", as noted in factor 6.

From early 2007 through 2009, APS conducted siting studies within a study area of approximately 400 square miles, coordinated with appropriate agencies, and completed public involvement activities related to the Project (formerly known as the TS-5 to TS-9 500/230kV Transmission Line Project). The purpose of conducting siting studies was to gather and analyze data to address the above ARS described factors in development of routes to be considered in the APS Application for a CEC. In July 2008, APS submitted an application for a CEC for the Project to the ACC. The application for a CEC contained four alternatives, though each was not mutually exclusive of the other (i.e., there were common segments among the alternatives). The alternatives that APS presented in their CEC application included: the APS preferred route (along the Carefree Highway alignment), an Alternative 1 alignment (Lone Mountain Road and 235th Avenue), an Alternative 2 alignment (Lone Mountain Road and 187th Avenue to the Carefree Highway alignment), and an Alternative 3 alignment (along either side of SR 74). With regard to Alternative 3, the APS CEC application states, "North of SR 74, general plans call for parks/open space with BLM-administered land considered "dedicated" open space (Maricopa County 2000; City of Peoria 2006). The BLM-administered land north and south of SR 74 is managed for multiple uses but a utility corridor is not designated (BLM 1989, 2005)" (APS 2008a).

The Siting Committee held several days of public hearings between August and December 2008 for the purpose of receiving evidence and deliberating on the application of APS for a CEC (ACC 2008). On December 29, 2008, after an extensive public review process, the Siting Committee issued a CEC approving a route. The Siting Committee Chairman also filed a Procedural Order and Notice of Filing explaining certain language changes he made to the CEC approved by the Siting Committee which he concluded were consistent with the intent of the Siting Committee. The CEC approved a transmission line route that incorporated components of the APS preferred route, in conjunction with the Alternative 3 alignment, including BLM-managed lands north of SR 74 not located in a BLM-designated utility corridor.

Along certain portions of the approved route, the Siting Committee incorporated revisions suggested by intervening developers of private land. The Procedural Order and Notice of Filing provides an explanation of portions of the Siting Committee's decision, and indicates that the Siting Committee attempted "…to avoid the entrance to Quintero properties north of SR 74 and the properties of Diamond Ventures south of SR 74…" and that the language in the CEC "…is similar to language offered by Diamond Ventures and intended to address their concerns." The Procedural Order and Notice of Filing discussed "…avoiding directly impacting the Diamond Ventures properties generally and it discussed avoiding directly impacting specifically the Diamond Ventures property designated as Village 'E'" (ACC 2008). The decision by the Siting Committee to approve the CEC as described above was unanimous by that group. The ACC subsequently approved the CEC, with a minor modification on March 17, 2009 (ACC 2009). Through the CEC, the ACC directed APS to follow the "certificated route" for the proposed Sun Valley to Morgan transmission line.

Because the ACC-certificated route included BLM-managed public lands, APS had to seek a ROW from the BLM by submitting a ROW application. In reviewing such an application, the BLM considers the applicable and existing RMP for the BLM-managed public lands for which the ROW is being requested. At the time APS submitted this ROW application, the Phoenix RMP (BLM 1988) was in effect, but the BLM was in the process of developing the Bradshaw-Harquahala RMP. The development of the Bradshaw-Harquahala RMP included an 8-year planning period that resulted in publication of the Proposed RMP and Final EIS in August 2008. The development of the Bradshaw-Harquahala RMP included multiple public meetings with comment opportunities. APS participated and provided comments during the development of the RMP. In a letter submitted to the BLM on March 28, 2003, APS indicated that it had plans for new 500kV and 230kV transmission lines and substations in the RMP area, some of which would involve BLM-managed public lands. The letter stated that APS wanted to, "…propose several potential routes for the BLM to consider for utility corridors across these federal lands" (Herndon 2003). This letter was submitted several years before APS completed the detailed siting studies mentioned above and was APS' best estimate at the time of potential routes subject to further analysis.

In this 2003 letter, APS provided the BLM with a map of potential future corridor areas, and indicated priorities for those potential future corridors. The area along SR 74 was a third priority for a potential future utility corridor (Herndon 2003). Comparing Map 9 from the Bradshaw-Harquahala RMP with the map submitted by APS with their letter finds that a number of areas suggested by APS as first and second priorities for utility corridors were designated as multiuse corridors in the RMP.

The Bradshaw-Harquahala RMP provides management direction for public lands including the APS study area, and also establishes designated corridors for major utilities. Neither the Phoenix RMP nor the Bradshaw-Harquahala RMP contained a utility corridor along SR 74. Following the issuance of the Bradshaw-Harquahala RMP, the City of Peoria protested the plan for failing to establish a utility or multiuse corridor along SR 74 where the Bradshaw-Harquahala RMP was designating a transportation corridor in the same area. The Director of the BLM dismissed that protest because establishing a utility or multiuse corridor had not been raised during the planning process and thus, this issue was not considered during the

development of the Bradshaw-Harquahala RMP. Similarly, the Record of Decision (ROD) for the Programmatic EIS for Designation of Energy Corridors on Federal Lands in 11 Western States (BLM 2009a) did not identify a utility corridor along SR 74.

The BLM-managed public lands that were included in the ACC-certificated route (the "certificated corridor" or route for which the ACC approved a CEC) are located in two separate areas: 1) approximately two linear miles near the Sun Valley Substation within a multiuse corridor designated by the BLM in the Bradshaw-Harquahala RMP, north of the Central Arizona Project (CAP) canal in Buckeye, and 2) a block of public land north of and parallel to SR 74 in the City of Peoria and unincorporated Maricopa County, which is not within a BLM-designated utility corridor, and having BLM-designated Class III visual resource values; but are within an existing transportation corridor to allow for future expansion of SR 74. In addition to crossing BLM-managed public lands, the ACC-certificated route crosses other lands, the majority of which are Arizona State Land Department (ASLD) lands, as well as some U.S. Bureau of Reclamation (USBR) lands, and privately owned lands.

In summary, the route certificated by the ACC was not APS' original preferred route in its entirety, but was a blend of their preferred route and portions of their proposed alternative routes. The ACC-certificated route was not in conformance with the Phoenix RMP, nor is it in conformance with the Bradshaw-Harquahala RMP. In its explanation of the recommended route, the Siting Committee indicated that certain portions of the route were designed to avoid private development property (ACC 2008). Nevertheless, this was the route that the ACC directed APS to follow for the Sun Valley to Morgan transmission line project. As a result, APS has proceeded with efforts to acquire federal approval for the proposed transmission line on subject BLM-managed public lands.

After receiving the CEC from the ACC, on April 29, 2009, APS filed a ROW Application for Transportation and Utility Systems and Facilities on Federal Lands (SF-299) with the BLM to construct a 500/230kV transmission line within the ACC-certificated route. At that time, the final EIS was completed but ROD for the Bradshaw-Harquahala RMP had not been signed. The APS application was not in conformance with the existing Phoenix RMP (BLM 1988) that the HFO was working under until the ROD for the Bradshaw-Harquahala RMP could be signed and implemented. The application was, therefore, considered not in conformance with what was at that time the Phoenix RMP or the Bradshaw-Harquahala RMP, and could not be processed without amending the plan.

In April 2010, the ROD for the Bradshaw-Harquahala RMP was signed. However, because the Bradshaw-Harquahala RMP had not established a utility corridor in the area where the ACC certificated the route, the BLM needed to reject APS' ROW application based on the proposal not being in conformance with the Bradshaw-Harquahala RMP. In May 2010, APS appealed BLM's rejection of the ROW application to the Interior Board of Land Appeals (IBLA) and in October 2010, IBLA remanded the decision back to BLM indicating that the decision rationale required more detail. In December 2010, BLM agreed to consider an RMP amendment (RMPA) and process the ROW application, and subsequently determined that an EIS is warranted for this Project. A Notice of Intent (NOI) to prepare an EIS for the Project and RMPA was published in the *Federal Register* on April 11, 2011 (76 FR 20006-20007).

1.2 APPLICANT'S OBJECTIVE

The transmission line would establish a 500kV and 230kV connection between two substations (the approved Sun Valley Substation [formerly called TS-5] and the existing Morgan Substation [formerly called TS-9]). The 500kV transmission line was identified in APS' 2003 Ten-Year Transmission System Plan filed with the ACC in January of that year. Additionally, in APS' Renewable Transmission Action Plan submitted to ACC in 2009, the Sun Valley to Morgan 500kV transmission line was identified as a project that could be beneficial to renewable resource development in Arizona because the transmission line would connect renewable resource generation projects to the Phoenix metropolitan area load center (APS 2009a). According to APS, the connection between the Sun Valley and Morgan Substations would be the final segment in completing a continuous 500kV supply from the Palo Verde hub area (this hub creates a common location for commercial energy trading) to the northeast Phoenix metropolitan area (Pinnacle Peak Substation). The 500kV connection would increase the import capability (i.e., the transfer of electric energy) to the Phoenix metropolitan area and increase the export capability from the Palo Verde hub by approximately 600 megawatts (MW). This capability would increase to approximately 1,200 MW when combined with APS' Delaney to Sun Valley 500kV Transmission Line, which is scheduled to be in service by 2014. Because existing or other planned 500kV transmission lines in the system are almost fully committed to other generation sources, this 500kV line would facilitate the delivery of electricity from projected renewable energy resources. With over 1,500 MW of solar generation interconnection requests at the Delaney Substation (located between the Palo Verde hub and Sun Valley Substation), additional export and scheduling capability is necessary to facilitate delivery of electricity from proposed solar energy projects to electric load centers.

The 500kV transmission line would increase the reliability of the electrical infrastructure in Arizona by providing another 500kV source to the Pinnacle Peak Substation. This would be in addition to the sources from the northern Navajo and Four Corners generating stations that can be subject to system outages or wildfires along transmission lines. Additionally, in conjunction with the transmission system operated by Salt River Project, the 500kV circuit would increase the reliability of the extra-high voltage (EHV) transmission system. This would be accomplished by completing a 500kV loop that connects the Palo Verde Transmission system, the Southern Navajo Transmission system, and the Southern Four Corners system, thereby increasing reliability in the transmission grid to support the greater metropolitan Phoenix area.

The co-located 230kV transmission line would serve future load that is expected to develop in currently undeveloped areas in the Town of Buckeye, City of Surprise, City of Peoria, and unincorporated Maricopa County, as identified in APS' Renewable Transmission Action Plan. It would tie together the existing and planned 230kV and 69kV systems in the northwest Phoenix metropolitan area, thus providing additional reliability along with increased load serving capability. APS currently has no 230kV facilities in the majority of this portion of the Phoenix metropolitan area.

According to APS, the co-location of the 500kV and 230kV lines on the same structures would provide savings in ROW and easement costs to ratepayers, in contrast to the

inefficiencies of building two separate transmission lines and ROWs. It also eliminates future 230kV line siting efforts, which would become more difficult as the area is developed.

1.3 BLM'S PURPOSE AND NEED

1.3.1 Purpose of the BLM Action

The purpose of the BLM action is to respond to the APS request for access across public lands in order to construct, maintain, and decommission a co-located 500/230kV transmission line between the Sun Valley and Morgan Substations. The BLM would only be issuing decisions on those portions of the APS request that involve a ROW on public lands.

1.3.2 Need for the BLM Action

The Federal Land Policy and Management Act (FLPMA) (43 USC § 1761) as amended, establishes the BLM's multiple-use mandate to serve present and future generations (BLM 2001). The mission of the BLM is to sustain the health, diversity, and productivity of America's public lands for the use and enjoyment of present and future generations. The BLM's multiple-use mission, set forth in the FLPMA, mandates that the BLM manage public land resources for a variety of uses, such as energy development, livestock grazing, recreation, and timber harvesting, while protecting a wide array of natural, cultural, and historical resources (43 USC §1712).

Consequently, the need for the BLM action is established by the BLM's responsibility under the FLPMA to respond to a request for a ROW grant while avoiding or minimizing adverse impacts to other resource values and to locate the uses in conformance with land-use plans. FLPMA also requires that the BLM "develop, maintain, and when appropriate, revise land-use plans" (43 USC §1712). The BLM Land Use Planning Handbook (BLM 2005) states that RMP amendments are prompted by consideration of a proposal or action that does not conform to the RMP. An amendment to the Bradshaw-Harquahala RMP would be necessary because a utility corridor on public land in the location of the certificated route approved by the ACC along SR 74 was not established and high-voltage transmission lines crossing public land are required to be within designated utility corridors under the current RMP. RMP Decision LR-30 states that no new utility corridors were designated within the Castle Hot Springs Management Unit. In addition, the existing Visual Resource Management (VRM) Class designation would need to be amended and downgraded from VRM Class III to VRM Class IV for those public lands where views would be dominated by the transmission line, and thus would not meet the current VRM objectives. The VRM Class designation would also be changed for those public lands north and south of SR 74 surrounding the proposed transmission line ROW (i.e. existing transportation corridor north of SR 74 and the key-shaped public land piece south of SR 74) in order to avoid creating narrow linear strips designated as different VRM Classes. Approximately 3,375 acres would be changed from VRM Class III to VRM Class IV.

1.4 LEAD AND COOPERATING AGENCIES

The BLM is the lead federal agency responsible for preparing this EIS and associated analyses. The HFO is the lead office, responsible for consultations required by Section 7 of the Endangered Species Act of 1973 (ESA), as amended, and Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended.

Cooperating agencies include those federal, state, or local agencies that have jurisdiction by law and/or special expertise (40 Code of Federal Regulations (CFR) Section 1508.5). Those with jurisdiction by law will make their own decisions to approve or deny all or part of the Project. Those with special expertise or information have and will continue to assist in development of the analysis. In March 2011, the BLM sent letters to numerous agencies at the federal, state, and local level inviting participation as a cooperating agency in preparation of the EIS. A total of 33 agencies were sent a letter inviting them to participate as a cooperating agency. Six agencies have accepted: U.S. Air Force - Luke Air Force Base (LAFB), the U.S. Environmental Protection Agency (EPA), the ASLD, the Maricopa Association of Governments (MAG), the City of Peoria, and the City of Surprise. **Chapter 5 – Consultation and Coordination** contains a list of those invited to participate as cooperating agencies.

1.5 REGULATORY FRAMEWORK

1.5.1 NEPA and Plan Amendment Process

This EIS was prepared in accordance with NEPA and in compliance with the Council of Environmental Quality (CEQ) regulations (40 CFR §§ 1500–1508), Department of Interior (DOI) requirements (43 CFR Part 1600; Department Manual 516, [DOI 2009a]), guidelines listed in the BLM NEPA Handbook, H-1790-1 (BLM 2008b); and in the BLM Land Use Planning Handbook, H-1601-1 (BLM 2005). Under NEPA, federal agencies must consider the environmental effects of their actions. NEPA directs federal agencies to "utilize a systematic, interdisciplinary approach...in planning and decision-making, which may have an impact on man's environment, to ensure that environmental amenities and values...be given appropriate consideration in decision-making along with economic and technical considerations," and to "study, develop, and describe appropriate alternatives to recommended courses of action." This mandate applies to all "major federal actions" (43 CFR, Part 1500).

The preparation of an EIS follows a formal process consisting of nine major steps. The steps listed below include the BLM's ROW and RMPA process.

1. Issue an NOI to prepare an EIS and RMPA;
2. Conduct public and agency scoping;
3. Conduct an interdisciplinary analysis of the issues and alternatives;
4. Issue the Notice of Availability (NOA) for the Draft EIS and Draft RMPA;
5. Provide for public review and a 90-day comment period;

6. Review public input, prepare responses, and make necessary changes to the Draft EIS and Draft RMPA;
7. Issue a NOA for the Final EIS and RMPA;
8. Provide for a 30-day review/protest period on the Final EIS and RMPA and a concurrent 60-day Governor's consistency review of the RMPA; and,
9. Issue a ROD regarding the ROW grant and RMPA.

The EIS Decision Framework

This EIS analyzes and discloses the environmental impacts of the Proposed Action, the No Action Alternative, and other Action Alternatives (all alternatives are described in detail in **Chapter 2**) and is intended to encourage public participation in the BLM's decision-making process. It provides an analysis of impacts that would result from the implementation of the Proposed Action and other alternatives, describes mitigation measures that have been identified to address environmental consequences, and describes the Agency Preferred Alternative.

The RMPA and EIS processes will inform two decisions to be made by the BLM. First, BLM will decide whether or not to amend the Bradshaw-Harquahala RMP, as necessary, for the proposed route on public land north and south of SR 74 to: a) include a single-use, utility corridor on public lands that would support a 500/230kV transmission line between the Sun Valley and Morgan Substations, or b) include a multiuse utility corridor that would contain the requested 200-foot wide ROW; and c) change the VRM Class from VRM Class III to VRM Class IV, as necessary, of the area affected by the corridor. Second, BLM will decide whether or not to approve, deny, or approve the APS ROW application with modifications, or select another alternative. These decisions are summarized in **Table 1.5-1**.

Table 1.5-1 Decisions to be Made

LAND USE PLANNING DECISION OPTIONS	SITE-SPECIFIC DECISION OPTIONS
• Amend the Bradshaw-Harquahala RMP to add a single-use, utility corridor corresponding to the requested 200-foot wide ROW on public land north and south of SR 74 <u>and eliminate Decision LR-30</u>. • Amend the Bradshaw-Harquahala RMP to add a multiuse utility corridor that would contain the requested 200-foot wide ROW on public land north and south of SR 74 <u>and eliminate Decision LR-30</u>.	• Grant the ROW request on public lands as submitted, including ROWs for potential access roads and associated gates. • Grant a modified ROW on public lands for a selected Action Alternative, including ROWs for potential access roads and associated gates. • Deny the ROW request by selecting the No Action Alternative or an Action Alternative that does not require the use of public land.

Table 1.5-1 Decisions to be Made (Continued)

LAND USE PLANNING DECISION OPTIONS	SITE-SPECIFIC DECISION OPTIONS
• Do not amend the Bradshaw-Harquahala RMP to add a utility corridor. Existing corridors would remain intact. • Amend the Bradshaw-Harquahala RMP to change the existing VRM Class of the affected area from VRM Class III to VRM Class IV. • Do not amend the Bradshaw-Harquahala RMP to change the existing VRM Class of the affected area from VRM Class III to VRM Class IV.	

1.5.2 Relationship to Policies, Plans, and Programs

BLM

The FLPMA mandates that the BLM manage public lands on the basis of multiple use and sustained yield (43 USC § 1701[a] [7]). The BLM administers approximately 262 million acres of public land in the United States. This administrative responsibility consists of stewardship, conservation, and resource use, including the development of energy resources, in an environmentally sound manner. In addition, in 2012, the President directed the DOI, which includes the BLM, to permit 10,000MW of renewable energy on public lands; a goal that was met (Office of the Press Secretary, The White House, FACT SHEET: President Obama's Blueprint for a Clean and Secure Energy Future, March 15, 2013). The DOI is continuing to take steps to enable responsible development of energy on public lands, including supporting States that make investments to modernize and improve the reliability, security, and resilience of the grid. The DOI has been directed to make energy project permitting more robust. The President has challenged Americans to double renewable electricity generation from wind, solar, and geothermal sources by 2020; the value of renewable energy projects will be strengthened by a more robust transmission system that enables more opportunities for renewable energy delivery.

The BLM HFO prepared the Bradshaw-Harquahala RMP to provide comprehensive current and future management direction for the public lands administered by the HFO (BLM 2010a). The Bradshaw-Harquahala RMP directs management of the federal surface and mineral estate managed by the HFO, primarily within Maricopa and Yavapai counties in central and western Arizona with the westernmost lands extending into La Paz County. The HFO planning boundaries encompass more than 3 million acres, and the Bradshaw-Harquahala Planning Area encompasses 896,100 surface acres of BLM-administered lands north and west of Phoenix in central western Arizona. The area includes remote and undeveloped desert and mountain ranges, as well as wildland-urban interface zones near the

cities of Phoenix and Prescott, towns of Buckeye and Wickenburg, and other communities. These lands provide a wide range of recreational activities and natural and cultural resources to the public.

The Proposed Action and certain Action Alternatives would take place in the BLM-designated Castle Hot Springs Management Unit, which is managed under the Bradshaw-Harquahala RMP (BLM 2010a). The Bradshaw-Harquahala RMP allows for multiple uses of public lands and does not prohibit the development of transmission lines on public lands, although amendments to the RMP may be necessary.

The BLM Lower Gila North Management Framework Plan, June 1981 was also reviewed.

Federal Agency Management Plans

Although the Project would not use lands under the direct jurisdiction of LAFB, a portion of the Proposed Action does lie within the extended Accident Protection Zone (APZ) of Luke Auxiliary Field #1. Because compatible land uses within the extended APZ include communication facilities and utilities with height restrictions determined by local jurisdictions, the Proposed Action and all Action Alternatives presented in this EIS avoid the APZ and are thus compatible with the LAFB Clear Zone and APZs.

Local Jurisdictional Plans

Each of the jurisdictional plans reviewed for this EIS are listed below. Other planning documents were reviewed for additional context or information related to the future uses that were identified in the general plans.

The Proposed Action would traverse land under the planning jurisdictions of Maricopa County, Town of Buckeye, City of Peoria, and City of Surprise. It should be noted that the Proposed Action centerline in most instances follows section lines, which in some locations also represent boundaries between the planning jurisdictions. Therefore, actual planning jurisdiction crossed by the Proposed Action or Action Alternative routes may vary based on where actual ROWs are acquired.

- Maricopa County 2020, Eye to the Future, Comprehensive Plan, October 1997, revised August 2002 (Maricopa County 2002). The Proposed Action and Action Alternatives presented in this EIS are compatible with the Maricopa County 2020 Comprehensive Plan because the Plan does not specifically limit or restrict the location of transmission lines.
- Maricopa County 2020, Eye to the Future, White Tank/Grand Avenue Area Plan, December 2000 (Maricopa County 2000). The Proposed Action and Action Alternatives presented in this EIS are compatible with the Maricopa County 2020 White Tank/Grand Avenue Area Plan because the Plan does not specifically limit or restrict the location of transmission lines.
- Town of Buckeye General Plan Update, adopted January 2008 (Town of Buckeye 2008). The Proposed Action and Action Alternatives presented in this EIS are compatible with the Town of Buckeye 2008 General Plan Update because the Plan does not specifically limit or restrict the location of transmission lines. The

Plan recognized the need for future transmission line improvements and stated: "The Town would begin working with all the energy utilities within its jurisdiction and Planning Area to develop a comprehensive and coordinated Plan for the siting of additional infrastructure that will be necessary to meet the energy demands of the Town (at full build-out), the region and the Western Grid."

- City of Peoria General Plan, voter ratified in May 2001 and re-ratified in August 2010 (City of Peoria 2010). The Proposed Action and Action Alternatives presented in this EIS are compatible with the City of Peoria General Plan because the Plan does not specifically limit or restrict the location of transmission lines. The Plan recognized the need for future transmission line improvements and included the Proposed Action corridor on a revised Land Use map dated September 2008, printed June 2009.
- City of Surprise General Plan 2030, adopted July 2008 (City of Surprise 2008a). The Proposed Action and Action Alternatives presented in this EIS are compatible with the City of Surprise General Plan because the Plan does not specifically limit or restrict the location of transmission lines. The Plan recognized the need for future transmission line improvements and included a common sense approach that includes goals and policies such as: encourage utilities to maximize the use of existing utility corridors; locate near roadways; minimize corridor widths; select locations that reduce visual impacts; and other recommendations to consider when locating transmission lines.
- Maricopa Association of Governments (MAG) Regional Transportation Plan (MAG 2010); MAG Interstate 10-Hassayampa Valley Transportation Framework Study (MAG 2007); and the Arizona Department of Transportation (ADOT) SR-74 Final Feasibility Right-of-way Preservation Report (ADOT 2011). The Project alternatives transverse SR 74 and cross six future Arizona parkways planned in the Study Area. The interaction of these transportation facilities could have potential impacts on the proposed alternatives.

State of Arizona

The ACC's Renewable Energy Standard and Tariff Rules (ACC R14-2-1801–1815), along with other renewable energy mandates, call on the State's electric utilities to produce 15 percent of their electricity from renewable sources by 2025. Additional export and scheduling capability is necessary to facilitate delivery of proposed solar energy to load centers in Arizona; therefore, the Proposed Action and Action Alternatives would assist the State's electric utilities in meeting this goal and would be consistent with the State of Arizona objectives related to renewable energy development. This transmission line could carry energy from renewable energy projects listed in **Appendix 4B**, facilitating renewable energy development and assisting with meeting the State's renewable energy goals.

APS is required to adhere to the ACC-certificated route (**Section 1.2.2**) for the proposed transmission line. In the event that a route or route segment were permitted by the BLM or ASLD that is outside the ACC-certificated route, implementation could only occur if the ACC amended the CEC that has been issued for the project. The ACC's consideration of

amending the CEC would open the entire route decision up for public review and consideration, and would not be limited only to discrete portions.

1.5.3 Applicable Laws and Regulations

The Proposed Action and Action Alternatives must comply with numerous federal laws, statutes, regulations, and executive orders (EO) as outlined in **Table 1.5-2**.

Table 1.5-2 Federal Laws, Statutes, Regulations, and Executive Orders with which the Proposed Action and All Action Alternatives Must Conform

LAWS AND REGULATIONS	STATUTORY REFERENCE
Federal Laws and Statutes	
American Indian Religious Freedom Act of 1978	Public Law [PL] 95-341; 42 USC § 1996
Antiquities Act of 1906	16 USC 431 *et seq*.
Archaeological and Historic Data Preservation Act of 1974	PL 86-253, as amended by PL 93291; 16 USC § 469
Archeological Resources Protection Act, as amended	16 USC 470aa *et seq*.
Bald and Golden Eagle Protection Act of 1940	16 USC §§ 668–668d, 54 Stat. 250, as amended; and PL 95-616 (92 Stat. 3114)
Clean Air Act of 1990	PL 92-574; 42 USC 7401 *et seq*.
Clean Water Act	33 USC 1251 *et seq*.
Colorado River Basin Salinity Control Act of 1974	PL 93-320
Department of Transportation Act of 1966	PL 95-341; 42 USC § 1996
Endangered Species Act of 1973	PL 85-624; 16 USC §§ 661, 664, 1008
Energy Policy Act of 2005	PL 109-59
Farmland Protection Policy Act	PL 97-98 and 7 CFR § 658
Federal Land Policy and Management Act of 1976	PL 94-579; 43 USC § 1701 *et seq*.
Federal Noxious Weed Act of 1974 as amended by the Food, Agriculture, Conservation and Trade Act of 1990	USC 2801 *et seq*.
Federal Plant Pest Act	7 USC 150aa *et seq*.
Historic Sites Act of 1935	PL 292-74; 16 USC §§ 461–467
Land and Water Conservation Fund Act of 1965	PL 88-578

Table 1.5-2 Federal Laws, Statutes, Regulations, and Executive Orders with which the Proposed Action and All Action Alternatives Must Conform (Continued)

LAWS AND REGULATIONS	STATUTORY REFERENCE
Migratory Bird Treaty Act of 1918	16 USC §§ 703–712, as amended
National Environmental Policy Act of 1969, as amended	PL 91-190, as amended by PL 94-52, PL 94-83, and PL 97-258; 42 USC § 4321
National Historic Preservation Act of 1966	PL 89-665; 16 USC § 407(f)
Native American Graves Protection and Repatriation Act of 1990	25 USC 3001-30013 *et seq*.
Noise Control Act of 1972, as amended	42 USC 4901 *et seq*.
Noxious Weed Control and Eradication Act	PL 108-412
Nuisance Prevention and Control Act of 1990 as amended	16 USC 4701 et. seq.
Occupational Safety and Health Act	29 USC 651 *et seq*. (1970)
Pollution Prevention Act of 1990	42 USC 13101 *et seq*.
Religious Freedom Restoration Act of 1993	PL 103-141
Safe Drinking Water Act of 1974	42 USC s/s 300f *et seq*.
Safe, Accountable, Flexible, Efficient Transportation Equity Act	PL 109-59
Executive Orders	
Actions to Expedite Energy-related Projects	EO 13212
Consultation and Coordination with Indian Tribal Governments	EO 13084 EO 13175
Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations	EO 12898
Federal Compliance with Pollution Control Standards	EO 12088
Flood Hazard Evaluation Guidelines	EO 11296
Floodplain Management	EO 11988
Indian Sacred Sites	EO 13007
Intergovernmental Review of Federal Programs	EO 13272
Invasive Species	EO 13112

Table 1.5-2 Federal Laws, Statutes, Regulations, and Executive Orders with which the Proposed Action and All Action Alternatives Must Conform (Continued)

LAWS AND REGULATIONS	STATUTORY REFERENCE
Preserve America	EO 13287
Protection and Enhancement of Environmental Quality	EO 11514
Protection and Enhancement of the Cultural Environment	EO 11593
Protection of Wetlands	EO 11990
Responsibilities of Federal Agencies to Protect Migratory Birds	EO 13186
Use of Off-Road Vehicles on the Public Lands	EO 11644
Federal Regulations and Guidance	
BLM Land Use Planning Handbook	H-1601-1
BLM Land Use Permits and Leases	43 CFR 2920
BLM NEPA Handbook	H-1790-1
DOI Implementing NEPA Regulations	43 CFR Part 46
BLM Rights-of-Way Principles and Procedures	43 CFR 2800, as amended
Council on Environmental Quality General Regulations Implementing NEPA	40 CFR §§ 1500–1508
Floodplain Management	43 CFR § 6030
Prime and Unique Farmlands	7 CFR § 658
Protection of Historic Properties	36 CFR § 800
Responsibilities, and the Endangered Species Act (June 5, 1997)	Secretarial Order 3206
Section 404 of the Clean Water Act and Its Implementing Regulations	33 CFR §§ 320–331 and 40 CFR § 230

1.5.4 Permits Required or Potentially Required

To implement any of the Action Alternatives analyzed in this EIS, APS must acquire applicable federal, state, county, and local permits and other approvals, as necessary. Applicable or potentially applicable approvals (permits, licenses, compliance, or reviews) are listed in **Table 1.5-3**.

Table 1.5-3 Summary of Potentially Required Local, State, or Federal Permits, Licenses, or Authorizations

APPROVAL AGENCY	PERMIT POTENTIALLY REQUIRED	REGULATORY REQUIREMENT	PROJECT TRIGGER
Federal			
Bureau of Land Management	ROW Grant Land Use Plan Amendment	43 USC § 1761-1771	Request for ROW across BLM land
Bureau of Reclamation	Permit to cross the Central Arizona Project Canal	43 USC § 1761-1771	Request for ROW across USBR land
U.S. Army Corps of Engineers	Section 404 permit	Clean Water Act 33 USC 1251 *et seq*. 2	Impacts to jurisdictional Waters of the U.S.
U.S. Fish and Wildlife Service	Biological Opinion	Endangered Species Act 16 USC § 1531-1544	Potential to impact threatened or endangered species
Federal Aviation Administration	Permits	49 USC Sec 44718 and Title 14 CFR Pt 77	Obstruction standards, Hazards to air navigation
State			
State Historic Preservation Act	Consultation with the State Historic Preservation Office (SHPO)	A.R.S 41-861 to 41-864	Projects occurring on State Land
Arizona Department of Environmental Quality	Arizona Pollutant Discharge Elimination System stormwater permit for construction	Clean Water Act - Arizona Revised Statutes Title 49, Section 49-202	Required for construction activities impacting one acre or more
Arizona Department of Environmental Quality	Hazardous waste generator registration	Hazardous Waste Control Act of 1972 Arizona Administrative Code: Title 18, Chapter 8	Generation, storage and tracking of hazardous waste disposal during project construction and operation
Arizona Department of Agriculture	Application for Arizona Protected Native Plants and Wood Removal	Arizona Revised Statutes – Native Plant Law ARS Article 11 (§ R3-3-110- through R3-3-1111, Appendix A)	Displacement or removal of any native plant species

Table 1.5-3 Summary of Potentially Required Local, State, or Federal Permits, Licenses, or Authorizations (Continued)

APPROVAL AGENCY	PERMIT POTENTIALLY REQUIRED	REGULATORY REQUIREMENT	PROJECT TRIGGER
Arizona Corporation Commission	Certificate of Environmental Compatibility	Title 40, Chapter 2, Article 6.2 (sections 40-360 through 40-360.13), ARS	Transmission lines with more than two poles and greater than 115kV, or power generation facilities of 100 MW or larger
Arizona State Land Department	ROW Application	Title 37, Chapter 2, Article 10 (Section 37-461A), ARS	Required for utility and access road construction on State Trust land
State Historic Preservation Office (part of Arizona State Parks)	Consultations on National Register eligibility of cultural resources and effects of the proposed project	National Historic Preservation Act, Section 106, 36 CFR 800 A.R.S. 41- 861 to 41-864	Project activities (i.e., grading, trenching or other construction) may have potential to impact historic/cultural resources
Arizona State Museum	Arizona Antiquities Act permit	A.R.S. 41-841 to 41-847	Required for investigation of archaeological, historical, and paleontological sites and objects on state land
Arizona Game and Fish Department	None, coordination required	Arizona Revised Statues - Title 17 - Game and Fish Department	Part of site assessment activities for Arizona Corporation Commission process
Arizona Department of Transportation	Heavy haul permit	Arizona Administrative Code Title 17, Chapter 6 - Overdimensional Permits	Transport of oversized loads on roads under ADOT jurisdiction
Arizona Department of Transportation	Encroachment permit	ROW laws (Uniform Act)	Encroachment by facilities (e.g., transmission lines, pipes, new roads, etc.) May also be required for temporary construction access along SR 74 and US 60
Central Arizona Project	Permit or notification to cross the Central Arizona Project Canal	Land Use License	Permanent easement across the Central Arizona Project Canal

Table 1.5-3 Summary of Potentially Required Local, State, or Federal Permits, Licenses, or Authorizations (Continued)

APPROVAL AGENCY	PERMIT POTENTIALLY REQUIRED	REGULATORY REQUIREMENT	PROJECT TRIGGER
Local			
Maricopa County	Dust control plan Earth-moving permit Grading permit	Planning and Development Department, County Code	Construction
County and Local Jurisdictions Flood Plain Management	Notice to local jurisdictions, letter of requirements to fulfill	ARS 48-3609	Construction
City of Peoria	Grading permit and Desert Lands Conservation Ordinance waivers		Construction; work within city limits

1.6 TRIBAL CONSULTATION AND COORDINATION

In April 2011, the BLM contacted the following eight American Indian tribes to notify them of the Proposed Action and initiate formal consultation in preparation of the EIS: Gila River Indian Community, Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, Tohono O'odham Nation, Yavapai Prescott Tribe, Yavapai Apache Nation, Fort McDowell Yavapai Nation, and the Hopi Tribe. These tribes incorporated this area as part of their traditional territories and express cultural affiliation with prehistoric people who inhabited or migrated through the area. In response to requests for additional information, on July 30, 2012 the BLM provided the cultural resource inventory results to the tribes and the efforts made to avoid impacts to prehistoric sites through project design. In recognition of the special relationship with the United States government, the BLM will continue to consult with the appropriate tribal governments at an official, executive level (government-to-government) in accordance with the NHPA and other relevant legal authorities. Relating to the NHPA, the goal is to identify and assess potential effects on National Register-eligible places of traditional cultural importance and to consult with tribes on appropriate treatment to avoid, minimize, and resolve adverse effects. The BLM has provided and will continue to provide opportunities for government officials of federally recognized American Indian tribes to comment on and participate in the preparation of the EIS through review of the cultural resource inventory reports prepared for this Project and will consider comments, notify consulted tribes of final decisions, and inform them of how their comments were addressed in those decisions.

On November 14, 2012, a letter was sent to the eight tribes regarding the availability of the Draft EIS and summarizing previous consultation and coordination with the Tribes. This letter was also an invitation for the tribes to attend the public hearings to be held regarding the Draft EIS.

In addition to addressing the effects of the transmission line, consultations will address: (1) consistency with tribal plans, as appropriate; and (2) observance of specific planning coordination authorities, including Section 101(d)(6) of the NHPA, American Indian Religious Freedom Act (AIRFA), EO 13007 (Indian Sacred Sites), EO 12898 (Environmental Justice), Secretarial Order 3206 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, Secretarial Order No. 3317 (Department of the Interior Policy on Consultation with Indian Tribes), and the ESA). Consultation with the State Historic Preservation Office (SHPO) pursuant to Section 106 of the NHPA, will be coordinated with tribal consultation, as appropriate. Detailed information on tribal consultations is provided in **Chapter 5 – Consultation and Coordination**.

1.7 SCOPING AND PUBLIC INVOLVEMENT

Public scoping is an integral part of the NEPA planning process. It provides "an early and open process for determining the scope of issues and alternatives to the Proposed Action to be addressed and for identifying the significant issues related to a Proposed Action" (40 CFR 1501.7). Public and agency input is solicited in order to identify the range or scope of issues to be addressed during the environmental analysis and in the EIS. Initiation of the EIS process and the public scoping meetings for the EIS were announced through the *Federal Register*, BLM news releases, paid announcements in the media, and postings on the BLM's project websites. These activities are described below and in more detail in **Chapter 5 – Consultation and Coordination**.

1.7.1 Federal Register Notice of Intent

The public was notified of the Proposed Action and upcoming EIS scoping meetings through the NOI posted on the *Federal Register* website on April 8, 2011, and published in the *Federal Register* on April 11, 2011 (76 FR 20006-20007). The notice announced the intent to prepare an EIS and provided the website address that listed specific dates, locations, and times of the public scoping meetings. In addition, the notice provided information such as a description of Project facilities and location, information on how to submit comments and why they are important, and contact information for the BLM. The comment period for the EIS scoping closed on May 26, 2011.

1.7.2 Mailings, Posters, and Email Notifications

Invitation letters were sent to a mailing list consisting of 538 individuals that included those who commented during the ACC process, mining claimants, and other interested parties. Postcard mailers announcing the time, date, and location of the public scoping meetings were sent to the recipients of the scoping invitation letters, and an additional 12,002 interested parties and members of the public whose addresses were identified based on mail carrier routes within the communities identified by the BLM and within the Project Study Area.

Four hundred community/neighborhood outreach flyers were distributed and/or posted at 24 locations in potentially affected communities on April 14 and April 18, 2011. Some of these included distributions or postings at multiple sites within one area, including four sites

across Lake Pleasant Regional Park. Twelve 18- by 24-inch signs were also posted at some locations.

On April 14, 2011, the first email notifications were sent to agencies, government officials, special interest groups, and other interested parties. This reminder contained the dates, times, and locations for the agency scoping meeting and each public scoping meeting. Each email included a link to the Project website and BLM contact information. Another reminder went out to these groups on April 25, 2011, one day prior to the first scoping meeting in Phoenix. Prior to the official May 27, 2011, end date for the scoping comment period, two emails were sent to these groups on May 24 and 26, 2011 with the goal of maximizing public involvement.

1.7.3 Media Contacts

Beginning on April 12, 2011, and ending one day before the last public scoping meeting, APS placed 39 paid display announcements in local newspapers throughout the Project Study Area and the Phoenix metropolitan area announcing the time, date, and location of the public scoping meetings, as requested by the BLM. Announcements were placed in the following newspapers: The *Arizona Republic* (statewide coverage, NW Valley zones 1 and 20, Peoria zone 2, Glendale zone 9 and North Phoenix zone 21), *Peoria Times*, *Sonoran News*, *Surprise Today*, *West Valley View*, and *The Wickenburg Sun*.

1.7.4 Public Scoping Meetings

During the EIS scoping period, the BLM held three public scoping meetings and one cooperating agency scoping meeting to identify issues and concerns regarding the Project. These scoping meetings provided an opportunity for the general public as well as the agencies to learn about the Project and to provide comments to the BLM. Meeting locations, dates, times, and number of attendees is provided in **Table 1.7-1**.

In addition to the public scoping, on June 8, 2011, an Economic Strategies Workshop was also conducted for this Project to comply with the BLM's Land Use Planning Handbook during the EIS and Land Use Plan Amendment process. The purpose of the workshop was to identify to BLM, potential management opportunities that further the social and economic goals of area communities. A complete summary of this process and the information presented at the Workshop is included in the Project Record.

Table 1.7-1 Formal Scoping Meeting Dates, Times, Locations, and Attendees

LOCATION	DATE	TIME	ATTENDANCE*
Public Scoping Meetings			
Ramada Plaza Phoenix Metrocenter, Phoenix, Arizona	April 26, 2011	5:30 – 8:00 p.m.	29
Nadaburg Elementary School, Wittmann, Arizona	April 27, 2011	5:30 – 8:00 p.m.	66
Peoria Community Center, Peoria, Arizona	April 28, 2011	5:30 – 8:00 p.m.	249
Economic Strategies Workshop			
BLM National Training Center, Phoenix, AZ	June 8, 2011	5:00 – 9:00 p.m.	55
Agency Scoping Meeting			
Ramada Plaza Phoenix Metrocenter, Phoenix, Arizona	April 26, 2011	2:00 – 4:00 p.m.	23
		Total	**422**

*These counts reflect only those attendees who elected to sign in at the door. It was likely that there were others who did not sign in.

1.8 ISSUES IDENTIFIED DURING SCOPING

Pursuant to CEQ NEPA regulations (40 CFR 1501.8), it is through the scoping process that the lead agency (a) determines the scope and significant issues to be analyzed in depth in the EIS and (b) identifies and eliminates from detailed study the issues that are not significant, narrowing the discussion of such issues to a brief presentation in the EIS as to why they will not have a significant effect on the human environment. In brief, the scoping comments must be reviewed to determine the significant issues in the context of NEPA and conducting an EIS.

During the EIS scoping period, a total of 289 comments were received. Within the 289 comments, 935 issues were identified and categorized into the 11 main issue categories shown in **Table 1.8-1**. In addition to the comments received from the external (public) scoping process, internal scoping (derived from the BLM) identified either similar issues listed in **Table 1.8-1** or additional issues covered in this Final EIS and Proposed RMPA. These issues were identified and addressed in data collection methodologies and baseline reports that are included in the Project Record and are incorporated into the appropriate sections of this Final EIS and Proposed RMPA.

Table 1.8-1 Number of Scoping Comments Received by Issue

ISSUE CATEGORY	NUMBER OF ISSUES IDENTIFIED BY CATEGORY
Air and Climate	1
Biology	93
Health and Safety	103
Need and Reliability	6
NEPA Process and Resource Management Plan Amendment	61
Project Design Features, Mitigation Measures, and Alternatives	27
Recreation	11
Socioeconomic Values	As follows:
Property values	101
Environmental justice	1
Quality of life	5
General community	28
Scenic/Visual	103
Transportation and Traffic	52
Unclassifiable (general comments – non-substantive)	343
TOTAL	**935**

Issues raised and identified during scoping are summarized in **Table 1.8-2**. The table also identifies in what section of the EIS the issue is addressed. A complete summary of issues identified during scoping, including those issues that are not addressed in this EIS, is provided in the Project Scoping Report, which is available on the BLM Project website (see http://www.blm.gov/az/st/en/prog/energy/aps-sunvalley.html).

Table 1.8-2 Summary of Issues from Scoping

ISSUES	WHERE ADDRESSED IN EIS
Air and Climate • The Project would involve ground disturbance that may affect air quality in a designated nonattainment area.	**Sections 3.2 and 4.2**
Biology • The construction and operation of Project components could have an impact on wildlife and their habitats. North of SR 74, the Project could be within sensitive habitat or habitat for special status species. The area is already designated for approved off-road vehicles and grazing. Additional access to this area could lead to further habitat degradation. • The construction and operation of Project components could impact bird and bat habitat. (Electric transmission facilities cause bird and bat fatalities due to collision and electrocution.) Implementation of the latest guidelines for avian and bat protection will be critical to protection of these species. • The construction of Project components in proximity to the Agua Fria River and associated riparian vegetation could impact these resources.	**Sections 3.13 and 4.13 (Vegetation Resources), Sections 3.16 and 4.16 (Wildlife Resources)**
Health and Safety • Electromagnetic fields (EMFs) are thought to contribute to human health concerns. Existing and planned residences would be in proximity to the Proposed Action transmission line route on the south of SR 74, and thus potentially exposed to EMFs. • Lightning strikes to electric transmission facilities and other weather events can cause fires.	**Sections 3.8 and 4.8 (Public Health and Safety);**
Need and Reliability • The analysis should evaluate the need for increased capacity and reliability of power infrastructure in the metropolitan Phoenix area. • Project area lands were a significant part of the Lake Pleasant Resource Conservation Area. The value of the lands for conservation versus the need for the project needs to be analyzed.	**Sections 1.1.2 and 1.2** **Sections 1.1.2, 1.2, 3.10, and 4.10 (Socioeconomics)**

Table 1.8-2 Summary of Issues from Scoping (Continued)

ISSUES	WHERE ADDRESSED IN EIS
NEPA Process and Resource Management Plan Amendment • The Proposed Action was approved by the ACC whereas any alternative routes have not. Should they be selected, would need ACC approval. • The analysis should consider potential delay of the transmission line construction process due to any additional ACC approval requirements once the NEPA process is completed. • The Project components north of SR 74 would require a RMPA. This amendment process should consider: o The resource impacts of a RMPA. o The appropriateness of amending the Bradshaw-Harquahala RMP in such a way that would benefit developers. o The flexibility of the Bradshaw-Harquahala RMP to address present and future planning needs. • Correcting omissions and inconsistencies in the Bradshaw-Harquahala RMP. The analysis should evaluate applicability of the BLM policy of co-locating transportation and utility corridors to the Project. • The analysis should discuss applicability of federal and state policies regarding joint use corridors.	**Chapters 1, 2, and 4**
Project Design Features, Mitigation Measures, and Alternatives • Fencing to protect tortoises should be installed and access roads should be designed to minimize impacts to habitat. • Consider distances between the power line and surface in relation to water quality; for example, the impacts to public drinking water supplies if power lines or other components fall into the river or CAP canal. • The alternative of constructing the transmission line underground needs to be evaluated, specifically routing under the LAFB auxiliary field. • The alternative of aligning the transmission line route along the CAP canal needs to be evaluated. • The placement of the Project in or near subdivisions should be avoided.	**Chapter 2**

Table 1.8-2 Summary of Issues from Scoping (Continued)

ISSUES	WHERE ADDRESSED IN EIS
• The alternative of placing the transmission line in the West Wing Corridor needs to be evaluated. • The analysis needs to include compatibility of routes crossing non-BLM lands with approved land plans south of SR 74.	**Chapter 2**
Recreation • The Project may impact visual and recreation resources in the Hieroglyphic Mountains Recreation Area, Castle Hot Springs Special Recreation Area and The Boulders Off Highway Vehicle (OHV) Area. • The construction disturbance may impact OHV trails. • The analysis should evaluate the cost and effectiveness of rehabilitating construction disturbance in OHV areas (de facto creation of new roads/routes that could not be prevented or rehabilitated). • The Project would create access to currently undisturbed lands with potential proliferation of additional utilities in the area. • The analysis should evaluate protection of recreational resources identified in the Bradshaw-Harquahala RMP. • The analysis should evaluate the cumulative impacts of this Project on OHV multiuse trails state-wide in conjunction with renewable energy projects.	**Sections 3.10 and 4.10 (Recreation)**
Socioeconomic Values • The analysis should evaluate the direct, indirect, and cumulative impacts of the Project on area property values, considering the already weakened housing market. • The analysis should address the potential cumulative impacts from the increased capacity on future projects including renewable energy. • The analysis should assess the impact of the Project on area property values resulting in reduced tax revenues, and this impact on state/local budgets and school funding, preventing economic growth and recovery. • The analysis should evaluate compensation for homes taken as a result of the Project. • The analysis should evaluate the environmental justice aspects of the Project.	**Sections 3.9 and 4.9 (Socioeconomics)**

Table 1.8-2 Summary of Issues from Scoping (Continued)

ISSUES	WHERE ADDRESSED IN EIS
Socioeconomic Values (Continued) • The analysis should evaluate potential adverse impacts to socioeconomics of the recreation industry in Arizona. The land north of SR 74 (which includes BLM-managed lands) is used by a variety of recreational users, including OHV riders and hikers. Assess the potential for closure of existing trails and access points and the impacts to recreation in the area. The analysis should include potential impacts on the social and non-monetary values associated with recreation, such as community cohesion. This might also include the value of ecosystem services, which are goods and services provided by nature that bring value to human life, but generally lack market prices. • The analysis should evaluate the potential beneficial impacts to socioeconomics through local job creation, income generation, and development of renewable energy generation sites.	**Sections 3.9 and 4.9 (Socioeconomics)**
Scenic/Visual • The Project will impact scenic views along the SR 74 corridor. • The analysis should evaluate the short-term visual impact to travelers on SR 74 versus long-term visual impact to area residents who would view the Project all the time and consider this affecting their quality of life in terms of social considerations. • The analysis should consider precedence for co-locating power lines and roads. • The analysis should revisit the major Bradshaw-Harquahala RMP issue of visual vistas associated with the Hieroglyphic Mountains and southern Bradshaws. • The analysis should consider the quality of the lands north of SR 74 for conservation management by the BLM as opposed to expanded development into BLM lands.	**Sections 3.14 and 4.14 (Visual Resources)**
Transportation and Traffic • The Project components that would be in proximity to the Thunder Ridge Airpark could impact that facility.	**Sections 3.12 and 4.12 (Transportation)**

1.9 ORGANIZATION OF THE EIS

This EIS complies with the CEQ recommended organization in 40 CFR 1502.10-1502.18. **Table 1.9-1** describes the organization of the Final EIS and Proposed RMPA.

Table 1.9-1 Organization of the Final EIS and Proposed RMPA

CHAPTER	CONTENTS
Chapter 1 – Introduction, Purpose and Need	This chapter provides a description of the Project, the role of the BLM in the EIS and RMPA process, and the required regulatory actions for the Project. Chapter 1 also includes a summary of the scoping process and issues identified.
Chapter 2 – Description of the Applicant's Proposed Project and Alternatives	This chapter describes the Project and Action Alternatives analyzed in the EIS, including the No Action Alternative. Alternatives that were considered, but eliminated from further analysis are described with a discussion of why they were not considered further. Environmental Protection Measures included in the Project are described along with mitigation measures identified during preparation of the EIS that would further reduce environmental effects. A comparison table of the environmental effects of the various alternatives is included along with the identification of the Agency Preferred Alternative.
Chapter 3 – Affected Environment	This chapter describes the existing environment that could be affected by the Proposed Action and Action Alternatives. The existing environment includes the social and natural environment.
Chapter 4 – Environmental Consequences	This chapter describes possible environmental consequences of construction, operation, maintenance, and decommissioning of the Project and alternatives analyzed in the EIS. Direct and indirect impacts of the Project and alternatives are assessed and described in order to allow for comparative impact evaluation. Impacts are compared to the social and natural environment that would be expected to exist if no action were taken (No Action Alternative). This chapter also describes the cumulative impacts: possible environmental consequences of construction, operation, and maintenance of the Project and alternatives analyzed in this EIS when added to all past, present and reasonably foreseeable actions in the Cumulative Effects Area for each environmental resource evaluated in the EIS.
Chapter 5 – Consultation and Coordination	This chapter describes public participation and Tribal consultation undertaken to date; and when additional public participation opportunities would occur throughout the EIS process. It also describes the recipients that will receive copies of the EIS for review, as well as the preparers of the document.

Table 1.9-1 Organization of the Final EIS and Proposed RMPA (Continued)

CHAPTER	CONTENTS
Chapter 6 – Comments and Response	This chapter provides a summary of all the comments received on the Draft EIS and the response to these comments.
Chapter 7 – References, Acronyms, Abbreviations, Glossary, and Index	This chapter lists references cited in developing the EIS, as well as providing acronyms, abbreviations, a glossary of terms used in the EIS, and an Index.

TABLE OF CONTENTS

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES 2-1

2.1 Introduction 2-1
2.2 Development of Alternatives 2-2
2.3 Description of Potential RMPA and ROW Actions 2-3
2.3.1 Resource Management Plan Amendment 2-3
2.3.2 Issuance of Rights-of-Way 2-4
2.4 Proposed Action 2-5
2.4.1 Proposed Facilities and Infrastructure 2-6
2.4.1.1 Transmission Line Support Structures 2-7
2.4.1.2 Transmission Line Hardware 2-8
2.4.1.3 Access Roads 2-8
2.4.1.4 Temporary Use Areas 2-9
2.4.2 Construction 2-10
2.4.2.1 Overview 2-10
2.4.2.2 Construction Requirements 2-10
2.4.2.3 Preconstruction Activities 2-13
2.4.2.4 Clearing and Grading 2-14
2.4.2.5 Transmission Line Construction 2-15
2.4.2.6 Special Construction Techniques 2-16
2.4.2.7 Safety Requirements during Construction 2-16
2.4.2.8 Cleanup and Site Reclamation 2-17
2.4.2.9 Temporary Disturbance Estimates 2-18
2.4.3 Operations and Maintenance 2-18
2.4.3.1 ROW Safety Requirements 2-19
2.4.3.2 Transmission Line Inspections and Maintenance 2-19
2.4.3.3 Permanent Access Roads along the ROW 2-20
2.4.3.4 Vegetation Management 2-20
2.4.3.5 Permanent Disturbance around Structures 2-22
2.4.3.6 Emergency Response and Fire Protection 2-22
2.4.3.7 Permanent Disturbance Estimates 2-23
2.4.4 Termination, Decommissioning, and Reclamation 2-23
2.4.4.1 Removal of Conductor and Structures 2-23
2.4.4.2 Obliteration of Structure Foundations 2-23
2.4.4.3 Reclamation of Roads 2-24
2.4.4.4 Stabilization and Revegetation of Disturbed Areas 2-24
2.4.5 Applicant-Committed Environmental Protection Measures and Best Management Practices 2-24
2.5 Action Alternatives 2-25
2.5.1 Alternative 1: Proposed Action with Additional Corridor 2-25
2.5.2 Alternative 2: ROW South of SR 74 2-26
2.5.3 Alternative 3: Carefree Highway Route 2-28
2.5.4 Sub-alternative: State Trust Land Route Variation 2-29

2.6 No Action Alternative 2-31
2.7 Alternatives Considered but Eliminated from Detailed Analysis 2-31
2.7.1 Cloud Road Route 2-32
2.7.1.1 Route Description 2-32
2.7.1.2 Route Overview and Screening 2-32
2.7.2 Hassayampa-Western SR 74 Route 2-33
2.7.2.1 Route Description 2-33
2.7.2.2 Route Overview and Screening 2-33
2.7.3 Hassayampa-Joy Ranch Road Route 2-34
2.7.3.1 Route Description 2-34
2.7.3.2 Route Overview and Screening 2-34
2.7.4 CAP Complete Route 2-35
2.7.4.1 CAP Background Information 2-35
2.7.4.2 Route Description 2-36
2.7.4.3 Route Overview and Screening 2-36
2.7.5 Luke Air Force Base Auxiliary Field #1 Bypass Route 2-38
2.7.5.1 Route Description 2-38
2.7.5.2 Route Overview and Screening 2-38
2.7.6 Vistancia Bypass Route 2-41
2.7.6.1 Route Description 2-41
2.7.6.2 Route Overview and Screening 2-41
2.7.7 Westwing/Navajo Corridor Route 2-43
2.7.7.1 Background Information 2-43
2.7.7.2 Route Description 2-43
2.7.7.3 Route Overview and Screening 2-44
2.7.8 Westwing/Grand Avenue-Navajo 500/230kV Separation 2-47
2.7.8.1 Route Description 2-47
2.7.8.2 Route Overview and Screening 2-47
2.7.9 CAP Canal Underwater 500/230kV Route 2-49
2.7.9.1 Route Description 2-49
2.7.9.2 Route Overview and Screening 2-49
2.7.10 Underground a Portion or All of the Project 2-49
2.7.10.1 Technology Background Information 2-49
2.7.10.2 Route Description 2-54
2.7.10.3 Route Overview and Screening 2-54
2.7.11 CAP to Grand Avenue 2-56
2.7.11.1 Route Description 2-56
2.7.11.2 Route Overview and Screening 2-57
2.7.12 Wittmann/Circle City Bypass Route 2-57
2.7.12.1 Route Description 2-58
2.7.12.2 Route Overview and Screening 2-58
2.7.13 Summary of Options and Route Screening Results 2-59
2.8 Comparison of Alternatives 2-69
2.9 Monitoring and Mitigation 2-85
2.9.1 Air Quality 2-85
2.9.2 Cultural Resources 2-87

2.9.3 Geology and Minerals 2-87
2.9.4 Hazardous Materials and Hazardous and Solid Waste 2-87
2.9.5 Land Use and Range Resources 2-88
2.9.6 Public Health and Safety 2-88
2.9.7 Paleontology 2-89
2.9.8 Recreation and Special Designations 2-89
2.9.9 Socioeconomics and Environmental Justice 2-90
2.9.10 Soils 2-90
2.9.11 Transportation and Traffic 2-91
2.9.12 Vegetation Resources, including Noxious and Invasive Weeds and Special Status Plants 2-92
2.9.13 Visual Resources 2-93
2.9.14 Water Resources 2-95
2.9.15 Wildlife Resources, including Special Status Wildlife and Migratory Birds 2-95
2.10 Agency Preferred Alternative 2-97

LIST OF TABLES

Table 2.4-1 Design Characteristics of the Transmission Line 2-6
Table 2.4-2 Construction Schedule 2-10
Table 2.4-3 Typical Transmission Line Construction Personnel and Equipment 2-11
Table 2.4-4 Proposed Action Temporary Disturbance Estimates 2-18
Table 2.4-5 Minimum Safe Clearance Zone at the Time of Maintenance 2-22
Table 2.4-6 NERC Arcing/Flashover Conditions Clearance 2 Distances 2-22
Table 2.4-7 Proposed Action Permanent Disturbance Estimates 2-23
Table 2.5-1 Alternative 2 Temporary Disturbance Estimates 2-27
Table 2.5-2 Alternative 2 Permanent Disturbance Estimates 2-27
Table 2.5-3 Alternative 3 Temporary Disturbance Estimates 2-29
Table 2.5-4 Alternative 3 Permanent Disturbance Estimates 2-29
Table 2.7-1 Summary of Options and Route Screening Results for Eliminated Alternatives 2-60
Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives 2-71

APPENDICES

APPENDIX 2A Best Management Practices
APPENDIX 2B Description of APS' Transmission Vegetation Management Program

This page intentionally left blank.

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This chapter fully describes the Proposed Action, three additional Action Alternatives, a Sub-alternative, and the No Action Alternative. The additional Action Alternatives are: Alternative 1, the Proposed Action with a widened multiuse utility corridor located north and south of SR 74; Alternative 2, ROW and widened multiuse utility corridor located south of SR 74; Alternative 3, Carefree Highway Alignment; and, a Sub-alternative: State Trust land Route Variation.

This chapter includes the following:

Section 2.1 introduces the chapter content.

Section 2.2 describes the process used to develop and screen alternatives to arrive at the alternatives evaluated in this EIS.

Section 2.3 describes the actions that BLM is proposing to take.

Section 2.4 provides a detailed description of the Proposed Action, which includes the Proposed RMPA, the route that the transmission line would follow, the processes for construction, operation, maintenance, termination, decommissioning, and rehabilitation of the Project. This section also contains temporary and permanent disturbance estimates and lists Environmental Protection Measures (EPMs) and Best Management Practices (BMPs) that would be employed.

Section 2.5 provides detailed descriptions of Action Alternatives 1, 2, and 3, plus the Sub-alternative, including temporary and permanent disturbance estimates.

Section 2.6 describes the No Action Alternative and assumes there would be no development of the Proposed Action or other Action Alternatives; it serves as the baseline for environmental conditions.

Section 2.7 briefly describes the alternative routes considered but eliminated from detailed analysis, providing a rationale for elimination based on the screening process described in **Section 2.2**.

Section 2.8 compares and summarizes the Proposed Action and Action Alternatives' Project components and environmental impacts.

Section 2.9 outlines the monitoring and mitigation requirements identified for the Project.

Section 2.10 presents the Agency Preferred Alternative.

All figures referenced in the text of this chapter are found in the Figures section of Volume II.

2.2 DEVELOPMENT OF ALTERNATIVES

This section describes the method by which alternatives to the Proposed Action were identified and screened for consideration for detailed analysis in this Final EIS and Proposed RMPA. The Proposed Action route, for which APS submitted an application to the BLM for a 200-foot wide ROW, is within the wider route (ranges between approximately 1,000 to 3,000 feet) that was certificated by the ACC (see **Section 1.1.2**).

The BLM is required to consider and analyze a range of alternatives that are considered "reasonable," usually defined as alternatives that are realistic (not speculative), technologically and economically feasible, and that respond to the purpose of and need for the Project (BLM NEPA Handbook H-1790-1, 6.6.3, BLM 2008a). To ensure the consideration of a wide range of potential alternatives, the use of different engineering technologies (undergrounding, splitting circuits, etc.) and routing alternatives were initially developed for further consideration.

As a part of the CEC application process discussed in **Section 1.1.2**, APS went through a process of developing and considering multiple route options from early 2007 through 2009, when APS conducted technical and environmental studies within an approximate 400-square mile study area. During the public scoping process for this Final EIS and Proposed RMPA, the BLM, with input from the public, identified several other possible transmission line routes or technological approaches within the study area. Although some of the other possible routes had been considered and eliminated previously by APS during the CEC application process, the BLM reevaluated the feasibility of the routes brought forth during the CEC scoping process. In addition, other routes that were not previously considered by APS were considered, but eliminated from detailed analysis by the BLM in this EIS.

Using the routes and route segments identified during the public scoping process, in conjunction with those considered during the ACC process, a total of 14 potential routes were developed that offered either technological or route options, or a combination thereof, to the Proposed Action.

These options/routes were screened to determine:

- Whether the option/route met the purpose and need and APS' objectives for the Project (**Sections 1.2** and **1.3**),
- Whether the option/route was technologically feasible,
- Whether the option/route was economically feasible and reasonable,
- Whether the option/route was environmentally reasonable, and/or
- Whether the route would have substantially similar effects or be substantially similar in design.

Where alternative technology was considered, determinations of technological feasibility were based on the maturity of the technology as reflected in its current use in this country and around the world. Otherwise, technological feasibility was determined by the degree of engineering or logistical challenges. Economic feasibility of routes/approaches was determined by comparing the overall cost of a route/approach based on cost estimates

provided by APS. Information on environmental conditions for a route was gathered from APS' CEC Application, Exhibit B-1, Environmental Report (APS 2008b), as most route segments were described in that report.

Routes and/or technological approaches that met the above criteria were carried forward as Action Alternatives to the Proposed Action for further evaluation relative to the applicable CEQ guidelines, and are described in **Section 2.5**. **Section 2.7** describes the routes and options considered but eliminated from detailed analysis, providing a rationale for elimination based on the screening process.

2.3 DESCRIPTION OF POTENTIAL RMPA AND ROW ACTIONS

2.3.1 Resource Management Plan Amendment

Depending upon the Action Alternative selected, the BLM might need to amend the Bradshaw-Harquahala RMP to designate either a single-use 200-foot wide or a larger multiuse utility corridor on public lands that would support a 500/230kV connection between the Sun Valley Substation and the existing Morgan Substation. In addition, a change to the existing VRM Class designations (from Class III to Class IV) could be needed on public land to allow for the utility corridor.

An amendment to the 2010 Bradshaw-Harquahala RMP would be necessary if a ROW for the proposed transmission line was issued on BLM-managed public land outside of an existing and designated utility corridor. The current RMP requires high-voltage transmission lines crossing BLM-managed public lands to be within designated utility corridors, and a utility corridor for the proposed ROW on public lands was not established. In addition, the VRM Class designation would need to be amended and downgraded from VRM Class III to VRM Class IV for those BLM-managed public lands where the objectives of the current VRM designation would not be met. The VRM Class may also be changed for lands surrounding the Project in order to avoid creating narrow linear strips designated as different VRM Classes, thus facilitating effective future management.

The decisions from the current Bradshaw-Harquahala RMP (BLM 2010a) that could potentially be affected and/or are related to this Project include:

Decisions Applicable to Entire Planning Area - Lands and Realty Management (LR)

Land Use Allocations

LR-2. Utility Corridors: Utility corridors are designated to meet future expected demands for energy and water transmission facilities. These designations conform to the utility regulations of the Arizona Corporation Commission and are consistent with the Approved Resource Management Plan Amendments and Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States.

Facilities significant enough to be the basis for corridor designation are the following:

- Natural gas and other pipelines at least 10 inches in diameter,
- Electric transmission facilities accommodating 115 kV lines or greater voltage, and
- Significant canals delivering water to urban areas.

Management Actions

Utility and Transportation Corridors

LR-15. All major utilities will be routed through designated corridors. Encourage new rights-of-way within designated corridors to promote the maximum use of existing routes. Encourage joint use whenever possible.

LR-16. Co-locate smaller utility lines needed for local service near corridors or within a corridor unless doing so would limit the opportunity to co-locate other major utility lines in the corridor.

LR-18. Whenever possible, design or route utility transmission lines to minimize adverse visual impacts to the surrounding lands and vistas.

Land Use Authorizations

LR-24. Continue to issue land use authorizations (rights-of-way, leases, permits, easements) on a case-by-case basis and in accordance with resource management prescriptions in this land use plan.

Decisions Specific to the Castle Hot Springs Management Unit

Land and Realty Management (LR)

Land Use Allocations

LR-30. No new utility corridors are designated within this Management Unit.

Recreation Management (RR)

Desired Future Conditions

RR-75. Emphasize preserving open space and retaining scenic and visual qualities. Sustain recreation, cultural, and biological assets while recognizing and protecting private property rights. Retain and acquire legal access to public lands.

Visual Resource Management (VR)

Land Use Allocations

VR-6. Project proposals that could result in surface disturbance or may contain visible components will be analyzed using procedures outlined in BLM Handbook H-8431-1, Visual Contrast Rating, to determine their conformance with the VRM allocation of the project area. If necessary, modifications will be made to the project, including design changes or a change of location, for the project to meet the VRM Class objective. In any case, regardless of VRM Class, an effort will be made to make any project proposal with a visible component as visually compatible with its surroundings as practical.

2.3.2 Issuance of Rights-of-Way

A ROW grant issued for 30 years with the option of renewal would be necessary for the operation, maintenance, and decommissioning of the transmission facilities located on BLM-managed public land. In addition, short-term ROWs would be required from the BLM to accommodate temporary construction activities, such as access roads and associated gates,

material/equipment staging, geotechnical testing, and other temporary short-term uses on those portions of the Project on public land.

2.4 PROPOSED ACTION

As stated in **Section 1.3**, the BLM's purpose and need is to respond to the APS request for a ROW grant for access across public lands. The Proposed Action under consideration in this analysis is the BLM's authorization of APS' proposal to construct, operate, maintain, and decommission a 500/230kV overhead transmission line within a 200-foot wide ROW within the ACC-certificated route for the transmission line (see **Section 1.1.2** and **Figure 2.4-1a**). The total length of the Proposed Action route would be approximately 38.2 miles, approximately 9 miles of which would cross BLM-managed public land. The ROW would contain a total of 926 acres, 219 acres of which would occur on BLM-managed public land.

Under the proposed Project (referred to as the Proposed Action throughout this document), an RMPA would establish the needed 200-foot wide ROW (100 feet on each side of the proposed centerline of the transmission line) as a single-use utility corridor on BLM-managed land paralleling SR 74. In addition, the existing VRM Class designation would be amended from VRM Class III to VRM Class IV for those areas of BLM-managed land where views would be dominated by the transmission line, and thus would not meet the objectives of the current VRM designation. The VRM Class designation would also be changed for those public lands north and south of SR 74 surrounding the proposed transmission line ROW (i.e. the existing transportation corridor north of SR 74 and the key-shaped public land piece south of SR 74) in order to avoid creating narrow linear strips designated as different VRM Classes. Approximately 3,375 acres would be changed from VRM Class III to VRM Class IV (**Figure 2.4-1b**).

From the Sun Valley Substation, the Proposed Action route follows the CAP canal for approximately two miles, portions which are on BLM land and within an existing BLM designated utility corridor, to approximately the 275th Avenue alignment. The route then turns northwest for approximately two miles following an existing 500kV transmission line. At the Happy Valley Road alignment the route turns north for approximately 4.5 miles, then east for approximately five miles paralleling the Lone Mountain Road alignment to the north. The route then turns north following 235th Avenue for approximately 3.5 miles then east following the Joy Ranch Road alignment, for approximately seven miles until it approaches SR 74. The route parallels the south side of SR 74 for approximately two miles before crossing and paralleling SR 74 to the north on BLM-managed public land for approximately five miles. The route again crosses SR 74 to parallel the south side of the highway for approximately three miles, crossing the Agua Fria River. The route then turns south for one mile, and turns east for less than one mile following the Cloud Road alignment to connect to the Morgan Substation.

Of the Proposed Action route, approximately nine miles would be located on public lands managed by the BLM within the Castle Hot Springs Management Unit of the Bradshaw-Harquahala Planning Area. In addition to crossing BLM-managed public land, the route crosses a substantial amount of State Trust land administered by the ASLD, USBR land, and privately owned lands. Because the ROW over public lands is needed to complete APS' proposed Project, which spans approximately 38 miles on mostly non-federal lands, and

cannot be separated out, BLM is analyzing the impacts of the entire transmission line for the purpose of analyzing the Project; however, the BLM decision would only apply to the portion of the transmission line route on federal lands.

The double circuit transmission line in most instances would typically be constructed on single-pole steel structures, approximately 135 to 195 feet tall, with non-reflective conductors. The line may need to be constructed as two, single circuits at various angle locations along the route.

The 500kV circuit would be installed for a proposed 2016 in-service date and the 230kV circuit would be strung on the same structures in the future when necessitated by load growth, currently projected beyond 2021. The design of the structures and selected structure type (monopole, lattice, or H-frame) may vary based on engineering criteria due to terrain features, and visibility of the structures.

The Proposed Action would be economically practical and feasible, with an overall cost estimate of $127 million (includes Project construction and ROW/easement acquisition costs).

2.4.1 Proposed Facilities and Infrastructure

According to APS, the design, construction, operation, maintenance, and decommissioning of the transmission line would meet or exceed the requirements of the National Electrical Safety Code (NESC), U.S. Department of Labor, Occupational Safety and Health Standards, and APS requirements for safety and protection of landowners and their property. The design characteristics for the transmission line are summarized in **Table 2.4-1** and are discussed in detail along with construction methods in the following sections.

Table 2.4-1 Design Characteristics of the Transmission Line

FEATURE	DESCRIPTION	
Type of Structures	Monopole, Lattice, H-Frame	
Structure Height	135 to 195 feet (Monopole), 175 to 190 feet (Lattice), 60 to 85 feet (H-Frame)	
Span Length	800 to 1,400 feet	
Number of Structures per Mile	4 to 7, between 36 to 63 structures on BLM lands	
Right-of-way Width	200 feet	
ELECTRICAL PROPERTIES		
	230kV Line	**500kV Line**
Nominal Voltage	230kV	525kV
Capacity	3185 amp	4860 amp
Circuit Configuration	Single or Double Conductor Vertical	3 Bundle Vertical
Conductor Size	2156 84/19kcmil*	(3) 1780 84/19kcmil
Shield Wire Size	.656" OD OPGW**	.656" OD OPGW
Ground Clearance of Conductor	25 feet 6 inches minimum	31 feet 6 inches minimum

*kcmil – 1000 circular mills
**OD OPGW – Outside Diameter Optical Ground Wire

2.4.1.1 Transmission Line Support Structures

Three types of steel structures could potentially be used for the transmission line, they include monopole/tubular, lattice self-supporting, and H-frame structures, shown in **Figures 2.4-2** through **2.4-5**. Decisions on what type of structures that would ultimately be used would be dependent upon future detailed engineering design and coordination with the appropriate land-managing agency.

The typical structures would vary in height from 60 to 195 feet tall, depending on the type of structure used, based on engineering considerations and site conditions. Dead-end or turning structure heights may be lower or higher depending on design constraints, but would remain less than 195 feet. The typical span length between monopole structures would generally vary between 800 and 1,400 feet, according to terrain conditions, and to achieve site-specific objectives. Lattice structures would achieve similar span lengths with typical structure heights of 175 to 195 feet. H-Frame structures would be used only in instances where height restriction of structures was necessary and would have typical spans of 700 to 800 feet with typical structure heights of 60 to 85 feet.

The pole structures would be dulled galvanized steel or self-weathering steel; dulled structures would be finished utilizing manufacturing techniques that would aim to approximate a gray color (i.e., Shadow Gray as portrayed in the BLM color chart or similar color) approved by the BLM, to reduce visibility of the structures in the landscape. The self-weathering finish is not available for lattice structures, therefore they would have a galvanized finish, if used. Paint or other finishes applied after manufacturing would not be used.

Structure selection and individual structure placement would be determined in the detailed design phase of the Project to minimize potential impacts of the facility. The height of and spacing between each structure would be determined based on detailed engineering and be dependent on the type of structure used and the terrain. Transmission line structures would comply with Federal Aviation Administration (FAA) Guidelines to minimize aircraft hazards (FAA 1993).

Although structure placement would avoid drainage channels and other problematic areas, it may be necessary to place one or more permanent structures within a floodplain, where an allowable span is not sufficient to cross a wide floodplain. If this becomes necessary, APS would prepare a scour analysis and acquire a floodplain use permit for such placements. Depending on the project, the Flood Control District of Maricopa County may request that APS demonstrate that the structures would not cause a displacement or increase the flood level. Based on the scour analysis, APS would place the appropriate structure type and design and any diversion needed to mitigate for potential displacement of flood flows.

The typical structure foundation for monopoles would be 6 feet in diameter and approximately 25 feet deep. The typical structure foundation for lattice structures would be three feet in diameter and approximately 15 to 20 feet deep at each of the four corners of each structure. The typical foundation for H-frame structures would be 5 feet in diameter and approximately 20 feet deep for each of the two poles comprising the structure. An area around each structure would be graded, as required, to provide a level pad for structure construction. The typical pad area would be approximately 100 x 200 feet, excluding cut and

fill slopes. Actual foundation size and depth may vary depending on soil, terrain, design, or other limitations.

2.4.1.2 Transmission Line Hardware

Conductor

The 500kV transmission line would be designed as a tri-bundled conductor three phase circuit (nine wires total) and the 230kV transmission line would be either a single conductor three phase circuit (three wires total) or a twin bundled conductor (six wires total). The 500kV and 230kV line would be strung on the same structures on separate sets of V-string insulators. The 230kV lines would be strung in the future when necessitated by expected load growth and reliability requirements. Conductors would have a low-reflective (non-specular), dulled finish to reduce visibility of the transmission line in the landscape. The minimum height of the 500kV conductor above the ground would be 31 feet 6 inches; the minimum height of the 230kV conductor above the ground would be 25 feet 6 inches.

Communication Systems

The Project would include two 96-pair fiber optic/static neutral cables at the top of the structures that would serve the dual purpose of a static wire or a single 96-pair fiber optic/static neutral cable with a single steel static shield wire. Static wires would have a low-reflective (non-specular), dulled finish to reduce visibility. A static wire is a grounded wire at the very top of the structures intended to protect lower conductors from lightning and is sometimes called a shield wire. These lines would provide data transfer for operation of the lines and substation equipment. The fiber optic cables would be used solely by APS or other partners in the Project. They would not be made available for any other commercial use. No special equipment or repeaters would be required for this Project.

The fiber optic cable requires splice points approximately every two to four miles along the transmission line route. At splice points, the fiber optic cable would be terminated at the top of the structure and routed down the structure to a splice box approximately 15 feet above ground level.

2.4.1.3 Access Roads

Transmission line construction would require the movement of trucks, large vehicles, and construction equipment along the ROW. Unpaved access roads would be used for construction, operation, maintenance, and decommissioning activities on the transmission line. Graveling dirt access roads is not anticipated or proposed, although it may be necessary where access roads intersect paved roads to prevent trackout. Existing roads would be used for construction, to the extent practicable, where they provide adequate access to the line. Only designated access roads would be used during construction in accordance with the APS requirements for transmission line access roads. If required by the underlying land owner or if APS finds it to be warranted, access roads could be gated to prevent access by unauthorized personnel. Gates would only be installed after APS obtained any appropriate authorizations/permits/ROWs, as needed.

The 14–foot-wide permanent access road would be within the granted ROW and when temporary construction access or access for operations and maintenance outside of the ROW

is necessary, authorization would be required on associated BLM lands. The permanent access road would be placed to minimize impacts to natural or cultural resources. Future authorized access, level of use, and the specific location would be in consultation and approval with the underlying land owner. If necessary, permanent spur roads approximately 14 feet wide and averaging 75 feet in length would be constructed from the access roads to the structure sites. Actual length of spur roads is dependent on terrain, engineering, and other conditions and may exceed 75 feet in some instances. Each spur road would lead to a construction pad for a support structure. Temporary construction access roads leading from SR 74 and U.S. Route 60 (US 60) and to the ROW would be 14 feet wide. Arizona crossings (a standard crossing/ford on an ephemeral stream) would be installed at drainages and wash crossings. Paved acceleration and deceleration lanes would be constructed where temporary access roads intersect SR 74 and US 60, disturbing approximately three acres in each location. APS would not remove these lanes and reclaim the land unless required to do so by the entity with jurisdiction over the roadway and/or property. APS would coordinate with ADOT following Project approval to determine the exact locations of all acceleration and deceleration lanes and whether they would be temporary or permanent based up operational and maintenance needs. Depending on the condition of other existing roads that would be used for access, road improvements may be required. APS would minimize vegetation disturbance outside of the transmission line ROW, particularly in drainage channels and along stream banks, and would reseed native areas of construction disturbance outside of the transmission line ROW after construction has been completed.

Access road construction and improvement would include dust-control measures (e.g., watering roads) as required. All existing roads would be left in a condition at least equal to their condition prior to the construction of the transmission line. The exact location of all access roads would be further refined and specified once the Project is approved, the final route selected, and detailed engineering is actually prepared. This detailed information would be thoroughly described in the Implementation Plan of Development that would be finalized once the NEPA process is completed. A preliminary estimate of the location and extent of potential access roads to reach the ROW and potential upgrade locations are provided and discussed in **Section 4.12**.

All roads would be constructed in accordance with the APS requirements for transmission line access roads based upon a Road Specification Plan that would be developed by APS specifically for this Project and in compliance with local jurisdictional regulations. Construction access roads would be repaired, as necessary, but would not be routinely graded.

2.4.1.4 Temporary Use Areas

At each structure site, areas would be needed to facilitate the safe operation of equipment, such as construction cranes or line trucks. The area required for the location and safe operation of cranes and line construction equipment would be approximately 100 feet wide within the 200-foot ROW. At each site, a work area of approximately 20,000 square feet (less than 0.5-acre) within or adjacent to the ROW would be required for the location of structures, assembly, and positioning of the structures. Two material laydown areas, each approximately 40 acres in size, would be located on private land. Laydown areas provide storage areas for

the transmission line construction materials during the life of the Project. Approximately every two to three miles, tensioning or pulling sites would be required and each would be approximately 80,000 square feet in size (less than two acres each), on lands within and adjacent to the ROW. It is estimated that up to three tensioning or pulling sites could be situated on public lands within and/or adjacent to the ROW. Sites located outside the ROW on BLM-managed public land would require a short-term ROW authorization.

2.4.2 Construction

2.4.2.1 Overview

Construction of the transmission line between the Sun Valley and Morgan Substations could be performed in the following sequence of activities: pre-construction engineering surveys (months prior to construction); surveying and staking of the centerline; construction mobilization, construction of access roads; locating and establishing material and construction yards; installing foundations and anchors; assembling and erecting the structures; installing ground rods and counterpoise; installing conductors, shield wires, and fiber optic cables; commissioning the line, cleanup and site reclamation. See **Figure 2.4-6**.

Structure components and associated hardware would be shipped to each structure site by truck or other means of transportation, including helicopter use. Structures would be assembled and associated line hardware would be mounted, at each pole or structure site using cranes and bucket trucks. After the structures are assembled, insulators, hardware, and stringing sheaves would be delivered to each structure site. The structures would then be rigged with insulator strings and stringing sheaves at each shield wire and conductor position. Structures would be erected in sections. For public protection during wire installation, guard structures would be erected over highways, railroads, transmission lines, buildings, and other obstacles.

2.4.2.2 Construction Requirements

Schedule

Upon obtaining all permits and ROW approvals, APS would commence construction activities. The schedule for construction of the entire 38-mile transmission line would span approximately 22 months, although some of the phases would overlap. **Table 2.4-2** below outlines the construction phase and anticipated duration.

Table 2.4-2 Construction Schedule

PHASE	DURATION
Road Construction	4 months
Foundation Construction	10 months
Transmission Line Installation	10 months
Reclamation	2 months*

*Note: Some items of reclamation such as the establishment of vegetation from seeds would exceed the duration listed and some of the phases would overlap with each other.

Equipment and Work Force

The number of workers and type of equipment expected to be used to construct the transmission line are shown in **Table 2.4-3**. However, this information is typical construction practice for APS and is not project-specific at this point of the Project.

Table 2.4-3 Typical Transmission Line Construction Personnel and Equipment

CONSTRUCTION PHASE	NUMBER OF PERSONNEL	EQUIPMENT REQUIRED
ROW/Construction	8 (including maintenance)	2 bulldozers (D-6 or D-8) 1 motor grader 2 pickup trucks 1 water truck (for construction and maintenance)
Survey	3	2 pickup trucks
Hole Digging and Installation of Foundations	10	2 hole diggers 1 bulldozer (D-6) 1 truck (2-ton) 1 water truck 2 pickup trucks 1 backhoe 2 dump trucks 2 wagon drills concrete trucks
Structure Haul	10	2 pole haul trucks 2 yard cranes (heavy duty) 1 water truck 2 pickup trucks
Structure Erection	10	1 crane (60-ton) 2 pickup trucks 1 water truck 2 trucks (2-ton)
Conductoring	25	1 helicopter and fly ropes 3 drum pullers (1 light, 1 medium, 1 heavy) 2 splicing trucks 2 double-wheeled tensioners (1 light, 1 heavy) 6 wire reel trailers 2 diesel tractors 1 crane (20-ton) 1 drag 1 sagging equipment 4 trucks (5-ton) 6 pickup trucks 5 two-man lifts 1 water truck

Table 2.4-3 Typical Transmission Line Construction Personnel and Equipment (Continued)

CONSTRUCTION PHASE	NUMBER OF PERSONNEL	EQUIPMENT REQUIRED
Clean-up	4	2 pickup trucks
Reclamation	4	1 bulldozer (D-8) 1 motor grader 1 pickup truck
Total Personnel Required	74 (more personnel may be utilized if needed to meet schedule)	

Construction Utilities

Generally, no new electric power distribution, temporary water, sewer or communications would be required for construction of any of the transmission line facilities. Temporary construction power would be provided by portable on-site generators. Sewer would be provided by temporary portable facilities. Communications would be provided by existing cellular telephone providers and through existing 800 megahertz (MHz) radio communication facilities.

During construction, water would be necessary for transmission line structure foundations, dust control, grading and site work, and landscaping, where required. The water would be provided through available local sources.

Short-term construction yards, and major material yards, would require electric power distribution, water, sewer and communications. Locations for these sites would be selected based on the availability of these services from local providers. Short-term construction yards are part of the material laydown areas and APS would plan to use private, previously disturbed lands for these purposes, if available.

Dust Control

Water application by truck would be the primary means of dust control at areas impacted by construction and near sensitive receptors and would typically require an average of 48,000 gallons of water per day during construction activities, although the actual amounts of water used on any given day would vary, potentially greatly, over the construction period of the Project in response to the activities being performed. Areas of higher erosion or poor soils, outside of desert tortoise habitat, may require application of a palliative dust reducing agent. Any application of palliatives or other dust reducing agents (potential options could include: calcium chloride, dust oils, bentonite, etc.), other than water must first be approved by the BLM. Speed limits on designated access roads would be set and strictly enforced. Gravel or other similar material would be used where dirt access roads intersect paved roadways to prevent mud and dirt track-out. All paved roads would be kept clean of objectionable amounts of mud, dirt, or debris, as necessary.

A complete Dust Control Plan would be prepared by APS specifically for this Project and would be implemented throughout the Project. This plan would be submitted as part of the Maricopa County Dust Control Permit application and would be included in the approved Plan of Development (POD).

Helicopters may be used for a portion of the construction to string conductors, transport materials, workers and equipment and to erect structures. Helicopters, if utilized, would be fueled at the lay down areas, which are expected to be located on private land. Additionally, refueling may also be performed at public or commercial airstrip, airports, or heliports. In the event that onsite storage of regulated petroleum products (fuel, oil, etc.) exceeds 1,320 gallons stored in containers that hold 55 gallons or more, then a Spill Prevention Control and Countermeasure (SPCC) plan would be required, and included in the approved POD. Helicopter landing and fueling areas would be watered as necessary for safety and dust abatement.

Stormwater/Wastewater Management and Erosion Control

During construction, stormwater would be managed according to the stormwater permit issued by the State of Arizona to APS for the Project. In general, construction erosion control would consist of BMPs, including techniques such as hay bales, silt fences, and revegetation, to minimize or prevent soils exposed during construction from becoming sediment carried off the site.

Wastewater would be generated during construction from:

- Concrete loads emptied from trucks
- Washing of exteriors of construction equipment and vehicles to remove accumulated dirt, which if required, would be performed offsite.

APS would manage wastewater from concrete truck washdown and cleaning of construction equipment such that there would be no discharge to surface waters. In addition, appropriate topography would be selected for the washout areas in order to avoid ponding, as pooled water can be attractive to desert tortoises and other wildlife species. Following construction, erosion control on disturbed areas would include revegetation (detailed in **Section 2.4.2.8**) in addition to the aforementioned techniques.

BMPs for the Project include measures that can be applied to the Project as a whole or may be used at site-specific locations where resource sensitivity is high. The BMP measures referenced in **Section 2.4.5** and described in **Appendix 2A** provide guidelines and types of measures that may be used to decrease impacts to resources as a result of the Project. Appropriate BLM and State representatives would supervise implementation of the mitigation measures specified.

2.4.2.3 Preconstruction Activities

Survey and Marking the ROW

Preconstruction foundation testing/geotechnical investigation activities would take place along the ROW in advance of the start of construction. These surveys would test foundation conditions at numerous locations and could include core boring or seismic refraction surveys. These activities are not anticipated to be needed at every structure location. Short-term access

would be required to facilitate these surveys and overland/cross-country travel is expected to be used. All preconstruction activities on public land would be authorized by the BLM prior to implementation.

Land surveying on public and private lands would occur across the entire Project in advance of construction. These surveys would mark authorized boundaries for all Project components including the transmission line ROW boundaries, angle points, individual transmission structures, guard structures and splice sites, access roads, etc.

Prior to any construction activities, the ROW and access roads would be flagged or staked to indicate approved activity areas to minimize impacts to surrounding areas. Preconstruction surveys (biological, cultural, etc.) would be used to identify areas to avoid during construction. Colored plastic ribbon (flagging) would be used to distinguish between areas that can be used and areas to be avoided. Flagging would provide a ground reference for construction crews, equipment operators, environmental monitors, and inspectors to use to make decisions in the field. No paint or permanent markings would be used on rocks or plants to indicate the ROW. Construction fencing would also be used to indicate areas to avoid. Flagging, fencing, and other markings would be maintained until final cleanup and/or reclamation is completed, after which they would be removed.

Construction Mobilization

Construction mobilization activities outside of the ROW include the construction contractor obtaining local construction permits and mobilization of their labor force and the necessary equipment to accomplish the construction of the transmission line. Also during mobilization and other preconstruction activities, contractor-required off-ROW material storage yards and construction yards would be identified and established.

2.4.2.4 Clearing and Grading

Work areas needed for the various stages of construction are described in **Section 2.4.1.4, Temporary Use Areas**. The actual number of work areas and locations would be determined once access roads are determined. Vegetation in the work areas would be trampled, not cleared, unless clearing is approved by the BLM (or ASLD on State Trust land or the private owner on private land). All activities would be conducted in accordance to the Arizona Native Plant Law. APS would comply with the notice and salvage requirements of the Arizona Native Plant Law and shall, to the extent feasible, minimize the destruction of native plants during Project construction. Nursery locations for salvaged plants would be identified after the plant salvage process begins and prior to construction. APS would also relocate salvaged plants to the edge of the ROW as an option to establishing nursery locations, in coordination with the appropriate land management owner/representative(s). After line construction, all disturbed areas not needed for normal transmission line maintenance would be graded to blend, as near as possible, with the natural contours, and revegetated where required.

Clearance of some natural vegetation may be required; however, selective clearing would be performed, only when necessary, to provide for surveying, electrical clearance, line reliability, and construction and maintenance operations. Pruning or removal of mature vegetation under or near the conductors would be done as needed to provide adequate

electrical clearance as required by NESC and North American Electric Reliability Corporation (NERC) standards. For more information on vegetation management, refer to **Section 2.4.3.4**. Procedures for inventory, transplant, and possible removal of saguaros are contained in **Appendix 2A**.

All ground clearing/disturbance activities that could affect sensitive species or habitat would be monitored. Specifically, a qualified biologist would be retained to monitor, and advise the construction contractor during preconstruction activities to minimize or prevent impacts to Sonoran desert tortoises and active migratory bird nests, as well as Hohokam agave. The qualified biologist would meet qualifications for GS-0486 series Wildlife Biologist according to the U.S. Office of Personnel Management (opm.gov) and be approved by the BLM. Surveys would be conducted in the layout/project planning phase and then again immediately prior (within a few days) to construction. If desert tortoises are encountered, any potential tortoise shelter sites in harm's way would be cleared for tortoises and then rendered unusable (filled in, blocked off with rocks, etc.). APS would follow the BLM's *Strategy for Desert Tortoise Habitat Management on Public Lands in Arizona* and any appropriate guidance issued by Arizona Game and Fish Department (AGFD) and U.S. Fish and Wildlife Service (USFWS). Preconstruction and construction crews would look out for and avoid tortoises. If tortoises must be moved to avoid harming them, they would be moved according to AGFD "Guidelines for Handling Sonoran Desert Tortoises" (2007).

In addition, cultural resource monitors would be retained as needed for clearing and grading activities near identified cultural resource sites.

2.4.2.5 Transmission Line Construction

Construct Structure Foundations

Foundations for the transmission line support structures would be reinforced concrete, with a minimal portion of the foundation visible above ground. The size of the foundation would depend on the terrain, soil conditions, and structure type (see **Section 2.4.1.1**). Excavations for poles/structures would be made with power equipment. Where the soil conditions allow, a vehicle-mounted power auger or backhoe would be used. In rocky areas, the foundation holes may be excavated by drilling and blasting, or special rock anchors may be installed. Blasting requires drilling holes in the area to be excavated and breaking the rock with explosives. Safeguards, such as blasting mats, may be used when needed to protect the adjacent property. After the foundation hole is excavated, a rebar cage and anchor bolts are set and then the hole is backfilled with concrete. The poles/structures would then be set and bolted to the anchor bolts after the concrete has cured. Remaining spoil material would be spread on the ground where practicable and any areas sensitive for resource consideration would be avoided. The foundation excavation and installation would require access to the site by a power auger, crane, flat bed semi-truck, and concrete trucks along with providing clearance for maneuvering and operation.

Erect Support Structures

Tubular-steel monopoles would be assembled in sections at each site. Lattice structures would be assembled either in sections in the laydown area with final assembly at each site or the full structure assembly may be completed at each structure site. The method used would

be determined by terrain and available space next to the structure site. Typically structure and pole sections would be erected by truck-mounted cranes with helicopters being used in extremely challenging terrain.

String Conductors

Temporary pulleys would be attached to the structure cross arms. A small diameter "pilot" line would be pulled (strung) from structure to structure by helicopter or all-terrain vehicle. A larger diameter, stronger line would then be attached to the pilot line and strung. This is called the pulling line. This process would be repeated until the permanent shield wire or conductor is pulled through.

The shield wire and conductor would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end. Sites for tensioning equipment and pulling equipment would typically be two to three miles apart.

The tensioning site would be an area approximately 200 feet by 400 feet (approximately two acres). Tensioners, line trucks, wire trailers, and tractors, which are needed for stringing and anchoring the shield wire or conductor, would be located at this site. The tensioner, along with the puller, maintains tension on the shield wire or conductor. Maintaining tension maintains ground clearance and is necessary to avoid damage to the shield wire, conductor, or any objects below them during the stringing operation. The same area could be used as a pulling site where a line puller, line trucks, and tractors, which are needed for pulling and temporarily anchoring the shield wire and conductor, would be located.

2.4.2.6 Special Construction Techniques

Helicopter Construction

If necessary, APS would employ helicopter services to deliver construction laborers, equipment, and materials to structure sites; for hardware installation and wire stringing. Helicopter staging areas would be approximately 10 to 15 acres and be situated along the Project ROW to facilitate fly time of four to eight minutes; typically five-mile intervals. The number of helicopter staging areas would be determined based on final Project design. A flight path map would be provided and contained in the approved POD.

Use of Guard Structures

Temporary guard structures (wooden poles that are temporarily installed and removed after wires/conductors stringing has been completed) would be placed on either side of a road or other obstacle within the ROW. These structures prevent shield wire, conductors, or equipment from falling on an obstacle. Equipment for erecting guard structures would include augers, line trucks, pole trailers, and cranes. Guard structures may not be required for small roads; however, other safety measures such as barriers, flagmen, or other traffic control would be used as necessary.

2.4.2.7 Safety Requirements during Construction

A Project Health and Safety (H&S) Plan would be developed to address health and safety risks and requirements during the construction stage of the Project and would be contained in the approved POD. As the Project moves into the operational stage, the components of the

H&S Plan would be modified to adapt to operational and maintenance activities. Components of the H&S Plan would include, but are not limited to: risk management analysis, emergency response, H&S planning and procedures, implementation, monitoring and reporting results, setting performance targets, incident classification, investigation and reporting results, audits and inspections, and H&S management review. APS H&S and environmental compliance documents would be developed as the Project nears the start of construction.

H&S requirements would be included in the H&S Plan. These requirements include personal protective equipment, housekeeping, maintaining a safe workplace, fire prevention, safe work practices, etc. APS contractors would be expected to comply with these requirements at a minimum. Contractors would have their own site specific H&S plans, and they would be reviewed for compliance.

2.4.2.8 Cleanup and Site Reclamation

Cleanup

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash, including stakes and flagging, would be removed from the sites and disposed of in an approved manner; there would be no open burning or on-site disposal of construction trash at any time during the life of the Project.

APS would adhere to Arizona's Native Plant Law, and would work with the applicable jurisdictions to implement restoration and reseeding of construction-disturbed areas sites, in accordance with BLM, State, and local requirements. As noted in **Section 2.4.2.4**, plants would be salvaged on State Trust lands, while safeguarded and salvage restricted plants protected by the Arizona Native Plant Law would likely be salvaged on BLM and private lands, pending a decision by the BLM. A salvage plan would be prepared and approved by the BLM prior to initiating construction activities for the Project. All plant material not salvaged could either be broken up to potentially aid in revegetation efforts and/or completely removed from the area and disposed of at an appropriate disposal facility.

Soil Stabilization

Disturbed surfaces would be restored to as near the original contour of the land surface as possible. Water diversions would be constructed along the ROW, as needed, to control surface water and minimize soil erosion. Temporary construction roads, not required for future maintenance access, would be restored after construction of the Project is complete. For example, access roads to staging areas would not be required once the staging area is regraded and vegetated. Areas of soil compaction, including temporary roads and reclaimed existing roads, would be scarified as needed. Seeding would be used where appropriate to reestablish soil stability.

Revegetation

Appropriate site-specific seed mixes for revegetation would be used where conditions vary. Salvaged native plants would be used for revegetation, if appropriate, along with seeding using BLM-recommended and approved seed mixes. Preferably, seed would be planted

during the months from November to January following transmission line construction. Seed would be planted as directed by the BLM. Specific details for revegetation activities would be described in the approved POD or within a specific Reclamation Plan prepared for this Project.

2.4.2.9 Temporary Disturbance Estimates

The estimated acreage of temporary disturbance required for construction of the Proposed Action is detailed in **Table 2.4-4**. Temporary disturbance areas would only be used during the Project construction phase and the areas would be immediately reclaimed following termination of their use. Where there would be overlap of temporary and permanent disturbance, the areas of disturbance are included in the permanent disturbance acreages presented in **Table 2.4-7**. Impacts associated with temporary disturbance are discussed in **Chapter 4**. Please refer to **Section 2.8** for a comparison of temporary disturbance under all alternatives.

Table 2.4-4 Proposed Action Temporary Disturbance Estimates

TEMPORARY DISTURBANCE AREAS		FEDERAL LANDS	STATE TRUST LANDS	PRIVATE LANDS	TOTAL
New/improved Access outside the ROW[1]	Miles	6	3	<1	10
	Acres	10	5	<1	16
Laydown/material sites[2]	Sites	0	0	2	2
	Acres	0	0	80	80
Transmission structure/pole pad construction area[3]	Sites	50	125	25	200
	Acres	23	58	12	93
Transmission conductor pulling/tensioning sites[4]	Sites	6	14	2	22
	Acres	11	26	4	41
Total	Acres	44	89	97	230

[1]Assumes road width of 14 feet. Estimated disturbance represents the maximum amount of temporary disturbance that would be expected in conjunction with the Project.
[2]Laydown/material sites are assumed to be 40 acres each.
[3]Number of sites and locations depend on route terrain, number of turning poles, and final design to reflect actual distance apart. Calculations assume the use of monopoles averaging 1,100 feet apart and pad areas of 100 feet by 200 feet.
[4]Assumes that each pulling/tensioning site is approximately 1.84 acres.

2.4.3 Operations and Maintenance

The APS mission is to provide their customers with a reliable supply of electricity while maintaining the overall integrity of the regional electrical grid. Additionally, APS must comply with industry standard codes and practices such as the NESC (American National Standards Institute [ANSI] C2) (ANSI 2012), which governs the design and operation of high-voltage electric utility systems.

Operation and maintenance activities would include transmission line inspections, climbing inspections of support structures, support structure maintenance, wire maintenance, insulator inspections as needed, access road maintenance and repairs, signage, vegetation

management, emergency response and fire protection, and termination and restoration. APS would keep necessary work areas around all structures clear of vegetation and would limit the height of vegetation along the ROW. The following sections provide details on the anticipated operation and maintenance activities.

2.4.3.1 ROW Safety Requirements

Land uses that comply with local regulations would be permitted adjacent to the Project ROW. Compatible uses of the ROW on public lands would have to be approved by the appropriate agency and APS if those uses (e.g., retention basins, trails, roads, etc.) traverse an approved Project ROW. APS would obtain the necessary land rights for the Project through exclusive electric transmission easements or by purchasing private property in fee. Licenses or permits would be obtained when crossing State Trust lands or other entities facilities or land rights.

2.4.3.2 Transmission Line Inspections and Maintenance

Following construction, the transmission line would typically be inspected annually, or as required, by using fixed-wing aircraft, helicopters, ground vehicles (4x4 trucks or 4x4 all-terrain vehicles [ATVs]), or on foot in accordance with APS' established policies and procedures for transmission line inspection and maintenance. The transmission lines would be inspected for corrosion, equipment misalignment, loose fittings, vandalism, and other mechanical problems. The need for vegetation management also would be determined during inspection patrols.

Detailed ground inspections would take place on an as-needed basis. The inspector would assess the condition of the transmission line and hardware to determine if any components need to be repaired or replaced, or if other conditions exist that require maintenance or modification activities. The inspector would also note any unauthorized encroachments and trash dumping on the ROW that could constitute a safety hazard. Typically, the inspector would access locations along the line and use binoculars and spotting scopes to perform this inspection.

Maintenance would be performed as needed during operations. Where access is required for routine (non-emergency) maintenance and repairs, the same precautions and procedures used during construction would be implemented to minimize ground disturbance, vegetation impacts, and other impacts to the area. APS would notify the BLM at least 30 days prior to any routine or planned maintenance activity and provide protocols for BLM's review and approval. The BLM would have a designated representative (employee or contractor) on site monitoring during these maintenance activities.

Routine maintenance activities typically consist of repair or replacement of individual components and as standard practice does not include new ground-disturbance activities. Routine maintenance is performed by relatively small crews using minimum equipment, over a short period of time (a few hours up to a few days). Equipment required for this work may include 4-wheel drive trucks, flatbed trucks, bucket trucks, boom trucks (high reach), or man lifts. Typical items that may require periodic replacement include insulators, hardware, or pole members on specific support structures.

Maintenance on the transmission lines can be completed safely using live-line techniques, avoiding interruption of service to critical transmission line infrastructure. High reach bucket trucks along with other equipment are used to conduct these activities.

Emergency maintenance (such as in the case of a power outage) would involve prompt response by repair crews to repair or replace damaged equipment. When emergency repair work is required, every attempt would be made to contact the land owner and notify them of the work. In the event notification is not successful, repair operations would proceed. Although restoration of the line would have priority under emergency conditions, all efforts would be made to protect the environment and other resources. Restoration and reclamation procedures following completion of repair work would be similar to those utilized during construction.

Storm damage repair can require the same types of equipment used during construction, including power augers for hole boring, backhoes for excavation, and/or concrete trucks and cranes for structure erection. Other required equipment may include power tensioners, pullers, wire trailers, crawler tractors, and trucks and pickups for hauling materials, tools, and work crews. Under certain conditions, a helicopter could be used to haul in material and erect support structures or string conductors in those areas where access and/or terrain conditions preclude the use of conventional methods. Site and access road disturbance such as ruts created during storm damage operations would be restored to original condition following rehabilitation procedures.

APS would submit annual monitoring reports detailing activities conducted within the ROW, the status of ongoing rehabilitation, and any other items specified by the BLM in the ROW grant. Reports would be submitted at the close of each calendar year for a minimum of five years after completion of construction.

2.4.3.3 Permanent Access Roads along the ROW

APS would maintain work areas and approved access roads adjacent to transmission structures and along the ROW for vehicle and equipment access necessary for operations, maintenance, and repair. Permanent ROW access roads would be allowed to naturally revegetate, but would be maintained, as needed, by APS to ensure safe and usable conditions. Gates would be installed, as required by the land owner or land managing agency, or if APS finds it to be warranted, to restrict unauthorized vehicular access to the ROW. A regular maintenance program may include but is not limited to grading, ditching, culvert installation, and surfacing.

2.4.3.4 Vegetation Management

For public safety and service reliability, APS is required to control vegetation growing in proximity to high-voltage transmission lines in conformance with NESC and NERC guidelines.

The electric voltage carried by a particular transmission line determines the conductor clearing requirements within transmission line ROWs. Other important considerations can include vegetation species types and growth rates, species structural failures that would allow a branch or tree to break and fall, local climate and rainfall patterns, terrain and elevation,

location of vegetation within a span, accessibility, and the risk of fire danger. Areas where vegetation grows much faster and taller than the surrounding vegetation may require greater clearance as well as a more frequent cycle interval in order to maintain industry compliance.

APS has in place a Transmission Vegetation Management Program (TVMP; see **Appendix 2B**) with the primary objective of improving the reliability of the transmission system by minimizing risks of vegetation-caused power outages to the greatest extent permissible. It is APS' goal to accomplish the work in compliance with all applicable regulations including ANSI A300 (Part-1)-2001 Pruning, industry safety standards, and according to science-based BMPs.

Additionally, APS has implemented the practice of Integrated Vegetation Management (IVM), which is based on ANSI A300 (Part-1)-2001 Pruning, which involves selectively controlling tall-growing vegetation while preserving low-growing herbaceous and woody plant communities. Vegetation management on transmission ROWs is accomplished year-round and may involve the use of mechanized equipment, herbicide application, trucks, ATVs, chainsaws, and heavy equipment (i.e. mower consisting of a rotary cutting device mounted on an arm on a rubber tire or tracked vehicle).

The desired outcome of IVM is stable shrub communities that do not interfere with overhead transmission lines, pose a fire hazard, or hamper access. A stable, low-growing shrub community contributes to reduced erosion and the establishment of a sustainable supply of forage and cover for wildlife as well as corridors for wildlife movement.

When the ROW is cleared for vegetation maintenance, APS' plan is to remove all tall-growing vegetation within the wire zone that can encroach into the under clearance (**Table 2.4-5**) and arcing/flashover (**Table 2.4-6** NERC Arcing/Flashover Conditions Clearance 2 Distances[1] (in feet)

6) distances. It is important to note that distances listed in the tables are current estimations and may change over the life of the Project as industry standards change. APS is required to control vegetation in proximity to high-voltage transmission lines in conformance with standards set by the NESC and NERC (FAC 003).

Most vegetation within the wire zone would be limited to low shrubs. The border zone is the remainder of the ROW and is managed to establish small trees and taller shrubs. Structurally unsound hazard trees and/or portions of trees located in the border zone along the ROW edges that could strike electric facilities would be identified for removal.

Examples of species expected to be maintained within the wire zone and border zone include desert broom (*Baccharis sarothroides*), desert hackberry (*Celtis ehrenbergiana*), California barrel cactus (*Ferocactus cylindraceus*), ocotillo (*Fouquieria splendens*), cholla species (*Cylindropuntia sp.*), and creosote (*Larrea tridentata*). Species expected to be removed include mesquite (*Prosopis velutina*), Palo Verde (*Parkinsonia sp.*), acacia (*Acacia greggii*), saltcedar (*Tamarisk sp.*), ironwood (*Olneya tesota*), and saguaro (*Carnegiea gigantea*).

Vegetation management specific to treatment of saguaros is detailed in **Appendix 2A**, specifying the circumstances under which saguaros would be transplanted versus removed, and the procedures that would be followed.

Table 2.4-5 Minimum Safe Clearance Zone at the Time of Maintenance

VOLTAGE	SIDE CLEARANCE DISTANCE	OVERHANG CLEARANCE DISTANCE	UNDER CLEARANCE DISTANCE
230.1-345kV	20' 4"	None permitted	35' 8"
345.1-500kV	24' 0"	None permitted	41' 4"

Table 2.4-6 NERC Arcing/Flashover Conditions Clearance 2 Distances[1] (in feet)

ALTITUDE	230KV	500KV
0-2,953	5.10	14.70
2,954-3,937	5.21	15.00
3,938-4,926	5.36	15.44
4,927-5,906	5.51	15.88
5,907-6,890	5.67	16.32
6,891-7,874	5.82	16.76
7,875-8,859	5.97	17.20
8,860-9,843	6.12	17.64
9,844-11,811	6.38	18.38

[1] Clearance 2 Distances refer to the shortest distance between conductive parts.

2.4.3.5 Permanent Disturbance around Structures

Shrubs, trees, large cactus, and other obstructions would be regularly removed near transmission line structures to facilitate inspection and maintenance of equipment and to ensure system reliability. All woody vegetation, including shrubs and trees would be cut down and treated with herbicides underneath each structure and 40 feet out from the foot of the structure. An area approximately 0.2-acre in size surrounding each monopole structure would be permanently disturbed and would not be returned to natural contours.

2.4.3.6 Emergency Response and Fire Protection

APS would prepare an Emergency Response Plan (ERP) for the Project. Copies of the ERP would be provided to all emergency services prior to the Project commencing construction (and would be contained in the approved POD).

All onsite employees for both construction and operations would receive annual fire prevention and response training by a professional fire safety training firm. The appropriate fire departments would be asked to participate in this training. Employees would be prohibited from smoking outside of company vehicles during dry summer months. The details of the plan would be provided as design is completed.

2.4.3.7 Permanent Disturbance Estimates

The estimated acreage of permanent disturbance required for operation of the Proposed Action is detailed in **Table 2.4-7**. Permanent disturbances are those areas that would persist for the life of the Project (through operations, maintenance, and decommissioning). Where there would be overlap of temporary and permanent disturbance, the areas of disturbance are included in the permanent disturbance acreages presented below. Please refer to **Section 2.8** for a comparison of disturbance under all alternatives.

Table 2.4-7 Proposed Action Permanent Disturbance Estimates

PERMANENT DISTURBANCE AREAS		FEDERAL LANDS	STATE TRUST LANDS	PRIVATE LANDS	TOTAL
Transmission structures[1]	Structures	50	125	25	200
	Acres	9	23	5	37
Transmission line spur roads[2]	Number	25	62	12	99
	Miles	0.4	0.9	0.2	1.4
	Acres	1	2	<1	3
Access road along the ROW[3]	Miles	10	25	5	40
	Acres	17	42	9	68
Total	Acres	27	67	14	108

[1] Number, type, and location of structures depend on route terrain, number of turning poles, and final design to reflect actual distance apart. Calculations assume the use of monopoles averaging 1,100 feet between structures and a permanent disturbance area of approximately 0.2 acres for each monopole structure.
[2]Assumes road width of 14 feet and length of 75 feet.
[3]Assumes road width of 14 feet.

2.4.4 Termination, Decommissioning, and Reclamation

2.4.4.1 Removal of Conductor and Structures

First, the conductors, insulators, and hardware would be dismantled from the transmission line structures and removed from the ROW. The decommissioning activity most notable to the general public would be the removal of the transmission poles and towers. The disassembly and removal of this equipment would essentially be the same as its installation, but in reverse order.

2.4.4.2 Obliteration of Structure Foundations

Once the structures have been removed, the foundations would be removed to below-ground surface. The concrete and steel within the deeper transmission pole foundations would be broken-up and removed to a depth of 36 inches below grade (industry standard). Fully removing the transmission pole foundations would require major excavation/disturbance at each tower site, as well as additional truck haul-away traffic. These factors could contribute to an unnecessary negative environmental impact to native plants and wildlife, increase soil compaction, as well as contribute to a potential reduction in air quality resulting from additional dust and truck emissions. The foundation sections below 36 inches, that are proposed to remain, are composed of non-leaching/natural elements (concrete, rock, and

steel) that should not present a hazard to the environment. All concrete and steel debris from foundation demolition would be removed from the site and be disposed of at an approved landfill facility. Voids left by the removed concrete foundations would be filled with native material and restored to original grade.

2.4.4.3 Reclamation of Roads

The land owner would have the choice when the Project is decommissioned as to which Project access roads are to be removed. If any roads are left, maintenance of the roads would become the responsibility of the land owner. Once all the necessary equipment and materials have been removed from an area and the road to that area is no longer needed, it can be removed. The road surface and any bed materials (i.e. gravel or rock for drainage crossings) would be removed down to its original grade if any cut and fill activities were required in originally constructing the road. Any materials native to the site would be scattered across the site, and foreign materials would be removed. Removed roads would be regraded to original contours if cuts and fills make such regrading practical.

2.4.4.4 Stabilization and Revegetation of Disturbed Areas

The area around transmission line towers and abandoned access roads would be reclaimed according to BLM stipulations in the ROW grant and the final reclamation plan. Where facilities or materials are removed, the land would be regraded back to preconstruction contours or as close as possible. Reclamation practices would incorporate soil stabilization measures to prevent erosion and sedimentation and revegetation as described above under **Section 2.4.2.8**.

2.4.5 Applicant-Committed Environmental Protection Measures and Best Management Practices

Activities under the Proposed Action and Action Alternatives (**Sections 2.5** through **2.7**) would include EPMs that are an integral part of the Project. These measures include BMPs established by the BLM for construction, operation, and maintenance of the Sun Valley to Morgan 500/230kV Transmission Line Project and other related facilities in this region (**Appendix 2A**). These BMPs, typical for a transmission line project of this nature, would be followed to avoid or minimize the potential for adverse environmental effects resulting from Project-related activities.

BMPs are described for the following:

- Air pollution prevention
- Landscape preservation and impact avoidance
- Erosion and sediment control
- Utility construction
- Biological resources (wildlife, vegetation)
- Cultural resources
- Paleontological resources
- Noxious and invasive weed management

- Reclamation (site restoration, revegetation)
- Visual resources
- Water pollution prevention and monitoring
- Noise prevention
- Hazardous material storage, handling, and disposal, and safety measures
- Socioeconomics

In addition to the BMPs, to ensure public health and safety, APS would comply with FAA permit requirements for Project components that may present aviation hazards. The FAA is the oversight agency that determines aerial marking requirements for aviation hazards.

2.5 ACTION ALTERNATIVES

A total of three Action Alternatives and one Sub-alternative to the Proposed Action have been identified and are described in the following sections. All portions of the Project west of US 60 and to the Sun Valley Substation are identical and common to the Proposed Action, and each of the Action Alternatives, including the Sub-alternative. The description and details for the facilities, construction, operation, and decommissioning activities, including EPMs and BMPs, described for the Proposed Action throughout **Section 2.4** would also apply to the Action Alternatives and Sub-Alternative described in the following sections. With exception of Alternative 1, the alternatives described in the sections that follow have segments outside the ACC-certificated route. Implementation of those routes could only occur if the ACC amended the CEC that has been issued for the Project. The ACC's consideration for amending the CEC would open the entire route decision up for public review and consideration, and would not be limited to discrete portions; a process that could conceivably be as lengthy and involved as the consideration of the original ACC application filed by APS, taking approximately one to three years (depending on whether the route would be a modification to an existing alternative or a new alternative route). As a result, construction of the 500kV transmission line would be delayed, and potentially the 230kV line as well, depending on the length of the ACC amendment process.

2.5.1 Alternative 1: Proposed Action with Additional Corridor

This alternative was developed to evaluate the establishment of a multiuse utility corridor as opposed to a single-use utility corridor as described under the Proposed Action. Co-location of future utilities within the corridor would be environmentally advantageous by consolidating similar land uses and disturbance in a discrete area.

Under this alternative, the route of the transmission line between the Sun Valley and Morgan Substations would be the same as the Proposed Action route. However, a multiuse utility corridor would also be established on BLM-managed public lands that would begin at the centerline of SR 74 and extend 0.5 mile north, and also include the entire block of BLM lands south of SR 74 (**Figure 2.5-1a**). This alternative would also require an RMPA to change those areas' VRM designation from VRM Class III to VRM Class IV to accommodate the proposed Project, as well as any future utilities within the multiuse utility corridor that may not meet VRM Class III objectives. Approximately 3,375 acres would be included in the multiuse utility corridor and changed from VRM Class III to VRM Class IV

(**Figure 2.5-1b**). Additionally, a ROW for the portions of BLM-managed public land within an existing BLM-designated multiuse corridor near the Sun Valley Substation would still be required under this alternative.

BLM-managed public lands that would lie within the multiuse utility corridor north of SR 74 are already contained within a transportation corridor designated by the Bradshaw-Harquahala RMP to allow for future planned expansion of SR 74. This allows BLM to consider additional linear ROWs within the same corridor. Any additional ROW applications would be considered on a case-by-case basis.

The total length of the Alternative 1 route would be the same as the Proposed Action - approximately 38.2 miles, approximately 9 miles of which would cross BLM-managed public land. The structures would require a ROW width of 200 feet, for a total of 926 acres, 219 acres of which would occur on BLM-managed public land.

The acres of temporary and permanent disturbance for Alternative 1 would be the same as the Proposed Action. Right-of-way acquisition and construction costs for Alternative 1 would be the same as the Proposed Action, approximately $23 million and $104 million respectively, for a total of $127 million.

2.5.2 Alternative 2: ROW South of SR 74

This alternative was developed in order to eliminate multiple crossings of SR 74 by keeping the transmission line on one side of SR 74 in response to visual and safety concerns. In addition, it would reduce the amount of BLM-managed public lands that would potentially be impacted, by moving the line onto private lands.

Under Alternative 2, a five-mile long segment that parallels the south side of SR 74 from the 163rd Avenue alignment to just west of the El Mirage Road alignment on private land would replace an approximately 5-mile long segment of the Proposed Action north of SR 74 on public lands, likewise being located within a 200-foot wide ROW.

Besides this five-mile long segment, all other segments of the Alternative 2 route would remain within the ACC-certificated route and would follow the Proposed Action route (**Figure 2.5-1a**).

Alternative 2 would also include an RMPA to establish a multiuse utility corridor on the entire key-shaped block of BLM-managed public lands immediately south of SR 74 and to change the VRM designation from VRM Class III to VRM Class IV in this same entire block area, approximately 1,013 acres **(Figure 2.5-1c)**. A ROW for the portions of BLM-managed public land within an existing BLM-designated multiuse corridor near the Sun Valley Substation would still be required under this alternative.

The total length of the Alternative 2 route would be approximately 37.4 miles, four miles of which would be on BLM-managed public lands. The structures would require a ROW width of 200 feet, for a total of 907 acres, 96 acres of which would occur on BLM-managed public land. The multiuse utility corridor that would be designated by the RMPA under Alternative 2 would be approximately 1,013 acres south of SR 74.

The estimated acreage of disturbance required for construction and operation of Alternative 2 is detailed in **Tables 2.5-1** and **2.5-2**. Right-of-way acquisition costs for Alternative 2 are

estimated to be $26 million due to the need for acquisition of private land primarily in the Saddleback Heights development. Construction costs are estimated to be $101 million. Total Project costs are estimated at approximately $127 million.

Table 2.5-1 Alternative 2 Temporary Disturbance Estimates

TEMPORARY DISTURBANCE AREAS		FEDERAL LANDS	STATE TRUST LANDS	PRIVATE LANDS	TOTAL
New/improved Access outside the ROW[1]	Miles	2	3	3	8
	Acres	4	5	5	14
Laydown/material sites[2]	Sites	0	0	2	2
	Acres	0	0	80	80
Transmission structure/pole pad construction area[3]	Sites	25	130	40	195
	Acres	12	60	18	90
Transmission conductor pulling/tensioning sites[4]	Sites	2	14	5	21
	Acres	4	26	10	40
Total	Acres	20	91	113	224

[1]Assumes road width of 14 feet. Preliminary road locations identified on **Figure 4.9-1** and discussed in **Section 4.12**.
[2]Laydown/material sites are assumed to be 40 acres each.
[3]Number of sites and locations depend on route terrain, number of turning poles, and final design to reflect actual distance apart. Calculations assume the use of monopoles averaging 1,100 feet apart and pad areas of 100 feet by 200 feet.
[4]Assumes that each pulling/tensioning site is approximately 1.84 acres.

Table 2.5-2 Alternative 2 Permanent Disturbance Estimates

PERMANENT DISTURBANCE AREAS		FEDERAL LANDS	STATE TRUST LANDS	PRIVATE LANDS	TOTAL
Transmission structures[1]	Structures	25	130	40	195
	Acres	4.5	23	7	35
Transmission line spur roads[2]	Number	12	65	20	97
	Miles	<1	1	<1	2
	Acres	<1	2	<1	3
Access road along the ROW[3]	Miles	5	26	8	39
	Acres	9	44	14	66
Total	Acres	14	69	21	104

[1] Number, type, and location of structures depend on route terrain, number of turning poles, and final design to reflect actual distance apart. Calculations assume the use of monopoles averaging 1,100 feet between structures and a permanent disturbance area of approximately 0.2 acres for each monopole structure.
[2]Assumes road width of 14 feet and length of 75 feet.
[3]Assumes road width of 14 feet.

2.5.3 Alternative 3: Carefree Highway Route

This alternative was developed in order to eliminate the need for an RMPA for both the establishment of a utility corridor and VRM Class change, and to reduce the amount of BLM-managed public lands that would potentially be impacted. However, a ROW for the portions of BLM-managed public land within an existing BLM-designated multiuse corridor near the Sun Valley Substation would still be required under this alternative. Additionally, this alternative would move the transmission line onto private lands planned for residential and commercial land uses.

Alternative 3 would replace an approximately nine-mile long segment of the Proposed Action route north of SR 74 from the 179th Avenue alignment to the Morgan Substation by using the Carefree Highway alignment. See **Figure 2.5-1a**. This alternative was the original APS proposal to the ACC during the State CEC process. The alternative extends south from the Proposed Action route at SR 74 along the 179th Avenue alignment and continues south two miles to the Carefree Highway alignment. The route then follows the Carefree Highway alignment east for about 8 miles to about 99th Avenue, where the alignment approaches the existing Salt River Project Navajo 500kV and Western Area Power Administration 230kV transmission line corridor. From that point, Alternative 3 turns northeast and follows the transmission corridor to the Morgan Substation.

Aside from this nine-mile long segment, all other segments of the Alternative 3 route would remain within the ACC-certificated route and would follow the Proposed Action route.

The total length of the Alternative 3 route would be approximately 38.4 miles, approximately 2.5 miles of which would cross BLM-managed public lands near the Sun Valley Substation that are within a BLM-designated multiuse corridor. The structures would require a ROW width of 200 feet, for a total of 931 acres, 45 acres of which would occur on BLM-managed public land. No new corridors would be designated on BLM-managed public lands under this alternative and no changes to existing VRM classifications would be needed, thereby eliminating the need for an RMPA.

The estimated acreage of disturbance required for construction and operation of Alternative 3 is detailed in **Tables 2.5-3** and **2.5-4**. Approximated ROW acquisition costs for Alternative 3 are estimated to be $29 million due to need for private land acquisition in the Vistancia, Saddleback Heights, and Lake Pleasant Heights developments. Construction costs are estimated to be $101 million. Total project costs are estimated at $130 million.

Table 2.5-3 Alternative 3 Temporary Disturbance Estimates

TEMPORARY DISTURBANCE AREAS		FEDERAL LANDS	STATE TRUST LANDS	PRIVATE LANDS	TOTAL
New/improved Access outside the ROW[1]	Miles	<1	3	6	9
	Acres	<1	5	10	15
Laydown/material sites[2]	Sites	0	0	2	2
	Acres	0	0	80	80
Transmission structure/pole pad construction area[3]	Sites	15	140	45	200
	Acres	7	65	21	93
Transmission conductor pulling/tensioning sites[4]	Sites	1	16	5	22
	Acres	2	30	9	41
Total	Acres	9	100	120	229

[1]Assumes road width of 14 feet. Preliminary road locations identified on **Figure 4.9-1** and discussed in **Section 4.12**.
[2]Laydown/material sites are assumed to be 40 acres each.
[3]Number of sites and locations depend on route terrain, number of turning poles, and final design to reflect actual distance apart. Calculations assume the use of monopoles averaging 1,100 feet apart and pad areas of 100 feet by 200 feet.
[4]Assumes that each pulling/tensioning site is approximately 1.84 acres.

Table 2.5-4 Alternative 3 Permanent Disturbance Estimates

PERMANENT DISTURBANCE AREAS		FEDERAL LANDS	STATE TRUST LANDS	PRIVATE LANDS	TOTAL
Transmission structures[1]	Structures	15	140	45	200
	Acres	3	25	9	37
Transmission line spur roads[2]	Number	7	70	22	99
	Miles	<1	1	<1	2
	Acres	<1	2	<1	3
Access road along the ROW[3]	Miles	3	28	9	40
	Acres	5	48	15	68
Total	Acres	8	75	25	108

[1] Number, type, and location of structures depend on route terrain, number of turning poles, and final design to reflect actual distance apart. Calculations assume the use of monopoles averaging 1,100 feet between structures and a permanent disturbance area of approximately 0.2 acres for each monopole structure.
[2]Assumes road width of 14 feet and length of 75 feet.
[3]Assumes road width of 14 feet.

2.5.4 Sub-alternative: State Trust Land Route Variation

This Sub-alternative was developed in response to a request made to the BLM by the ASLD, a cooperating agency in the NEPA process and a major governmental land management agency responsible for administration of State Trust lands along the Proposed Action route.

The Sub-alternative route would replace a four-mile section of the Proposed Action route that would also be common to all Action Alternatives (**Figure 2.5-1a**); therefore, it could be combined with any of the Action Alternatives. The Sub-alternative route would begin at the intersection of 235th Avenue and the Cloud Road alignment, just north of US 60. From that intersection point, the Sub-alternative would parallel the north side of the Cloud Road alignment, east for three miles to the intersection with 211th Avenue. The Sub-alternative would then parallel the west side of 211th Avenue for one mile north, where it would rejoin the portion of the Proposed Action route that is common to all Action Alternatives at the Joy Ranch Road alignment. The entire four-mile length of the Sub-alternative route would be outside the ACC-certificated route. Therefore, implementation of the Sub-alternative route could only occur if the ACC amended the CEC that has been issued for the Project, as described in **Section 2.5**.

Both the Sub-alternative route and the Primary Segment of the Proposed Action route would cross State Trust lands exclusively; there would be no change in the overall acreage of disturbance under the Sub-alternative route compared with the Proposed Action route in this area, as the only change would be the route that the ROW would take crossing three sections of State Trust land. The overall distance and area occupied by the ROW would be exactly the same under both the Proposed Action and the Sub-alternative.

The ASLD requested that BLM analyze the subject route in order to reduce the social and economic impacts that could result from dividing this block of State Trust land between SR 74 and Cloud Road west of 211th Avenue. It is ASLD's obligation and mission to manage these lands to enhance values and optimize economic return for the Trust's beneficiaries (ASLD 2012a). This Sub-alternative is being analyzed and presented only for environmental analysis purposes as requested by ASLD, and does not affect the BLM's decision-making process as it would not require the BLM issuance of a ROW or an RMPA.

The State Trust lands crossed by both the Sub-alternative and the primary portion of the Proposed Action route are within the jurisdiction of the City of Surprise. The City of Surprise General Plan designation for the affected State Trust lands is for rural residential development. There are numerous master planned communities in the area. ASLD has asserted that master planning is easier with large, self-contained blocks of land where infrastructure can be designed to avoid piecemealing, open space can be incorporated into the design, and development standards can be amended to take into consideration unusual land forms or constraints (ASLD 2012b). Neither this four-mile Sub-alternative route nor the Primary Segment of this area involves any BLM administered lands.

In addition, ASLD maintains that the subject block of State Trust land is a large uninterrupted assemblage of land that lends itself to master planning. Price surveys have shown that raw land prices are higher where the land is within a master planned area versus land outside of an area. ASLD believes that bisecting the land along the Cloud Road alignment under the Proposed Action route could compromise the future ability to utilize the lands for a master planned community, thereby reducing the economic value of those State Trust lands to the Trust. Further, ASLD believes that the Sub-alternative route would maintain the development integrity of the land, and result in a higher economic return of the State Trust lands for the larger parcel (ASLD 2012b).

2.6 NO ACTION ALTERNATIVE

Under the No Action Alternative, BLM would not approve either of the proposed portions of the ROW grant on BLM-managed public lands and the Bradshaw-Harquahala RMP would not be amended to designate a utility corridor (single-use or multiuse) or change the existing VRM designations. The 500/230kV transmission line would not be constructed across federal lands as proposed by APS. The No Action Alternative would not provide APS with a ROW for the approximately two miles of BLM-managed public land near the Sun Valley Substation which is in a BLM-designated multiuse corridor. Any future requests for a ROW grant on BLM lands in this area not analyzed in this current EIS or other existing NEPA documents would require additional NEPA analysis. NEPA regulations require the No Action Alternative to be included in the alternatives analysis of an EIS (CEQ Regulation Section 1502.14(d)). The No Action Alternative forms the baseline against which the potential impacts of the Proposed Action and the other Action Alternatives are compared.

A decision by the BLM to select a No Action Alternative would not respond to the APS Project objectives described in **Section 1.2** to increase reliability and import capability for renewable energy; however, it would not preclude APS from satisfying the Project objectives through alternative routes for the transmission line. Since the majority of the Project is not located on public lands, but the Project would still be necessary to meet the APS objectives regardless of location, APS may pursue other options to develop the Project without using public lands as described in this Final EIS and Proposed RMPA. Other potential development options could include pursuing approval to construct the Project on other Federal, State, or private lands. In this case, environmental or other resource impacts associated with construction and operation of the Project may still occur within the general vicinity.

Under the No Action Alternative, if APS were to pursue other potential routes outside the ACC-certificated route, implementation could only occur if the ACC amended the CEC that has been issued for this Project. Even if any future routes would include portions of the previously certificated route, the ACC's consideration of amending the CEC would open the entire route decision up for review and consideration, and would not be limited to discrete portions; a process that could conceivably be as lengthy and involved as the consideration of the original ACC application filed by APS, taking approximately one to three years (depending on whether the route would be a modification to an existing alternative or a new alternative route).

2.7 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

This section describes the alternatives to the Proposed Action that were considered but not carried forward in the detailed analysis for various reasons. These alternatives were generated and derived from discussions and alternative identification exercises that occurred at the public scoping meetings in Phoenix, Wittmann, and Peoria, from the Economic Strategy Workshop, and/or from internal scoping, comments submitted during the public scoping period, and comments received on the Draft EIS.

Using the process described in **Section 2.2**, several technological and routing options were eliminated from consideration for detailed analysis because they would not meet the purpose

and need for the Project or the Project objectives; or because they were not found to be technically or economically practical and feasible; or environmentally reasonable. The following sections provide background information on technological options, describe the routes eliminated, provide an overview of conditions along the routes, and contain the screening results that precluded them from further analysis.

In addition to not meeting various screening criteria, either portions of these routes or the routes in their entirety described in the following sections would be outside the ACC-certificated route; therefore, implementation of those routes would require the ACC to amend the CEC that has been issued for the project. The ACC's consideration of amending the CEC would open the entire route decision up for review and consideration, and would not be limited to discrete portions; a process that could conceivably be as lengthy and involved as the consideration of the original ACC application filed by APS.

2.7.1 Cloud Road Route

2.7.1.1 Route Description

The Cloud Road route would extend east from the Proposed Action route at the 235th Avenue alignment near Circle City for approximately 17.5 miles to the Morgan Substation, replacing the approximately 19-mile long portion of the Proposed Action route that would extend north on the 235th Avenue alignment, then east on the Joy Ranch Road alignment, and paralleling SR 74 to the Morgan Substation. All other segments of the route would remain within the ACC-certificated route and would follow the Proposed Action route. See **Figure 2.7-1**.

2.7.1.2 Route Overview and Screening

The portion of the route between 235th Avenue and 171st Avenue crosses a mixture of State Trust and private lands, which are primarily undeveloped with a small number of existing residences.

Local land use plans call for low-density residential uses in this area. The planned Grand Vista development will include residential, recreation, and golf course uses.

Between 171st Avenue and the Morgan Substation, private lands adjacent to Cloud Road are within the City of Peoria and are generally vacant and undeveloped. Local land use plans call for low to medium density residential uses and natural areas within the planned Saddleback Heights and Lake Pleasant Heights developments. The route would bisect the planned Saddleback Heights and Grand Vista residential developments and the Lake Pleasant Heights residential development, which is in its preliminary planning stage (APS 2008b). Near the Morgan Substation, the route crosses an existing 230kV line and the New Waddell Canal. Right-of-way acquisition and construction costs for the Cloud Road route are estimated to be $25 million and $96 million respectively, for a total of $121 million.

The screening process found that the Cloud Road route meets the purpose and need and APS' objectives for the Project; and it is technically and economically practical and feasible. However, this route would essentially have the same effects as and be very similar to Alternative 3, the Carefree Highway route. For this reason the Cloud Road route was not carried forward for detailed analysis.

2.7.2 Hassayampa-Western SR 74 Route

2.7.2.1 Route Description

The Hassayampa-Western SR 74 route would replace an approximately 25-mile long segment of the Proposed Action route that extends from the Sun Valley Substation northeast to the Deer Valley Road alignment, north to the Lone Mountain Road alignment, east to the 235th Avenue alignment, north to the Joy Ranch Road alignment, and east to the 179th Avenue alignment at SR 74. All other segments of the route would remain within the ACC-certificated route and would follow the Proposed Action route. See **Figure 2.7-1**.

2.7.2.2 Route Overview and Screening

The segment of the Hassayampa-Western SR 74 route between the Sun Valley Substation and Joy Ranch Road is characterized by undeveloped private land, with some agricultural uses near the south end. This segment would cross an existing 500kV transmission line. In addition, the route would also require a line directly over the CAP Hassayampa pump station (JBR 2011). The segment could interrupt the continuity of the Festival by Lyle Anderson development in three different places. Planned development of private lands in this area includes low and medium density residential within the Festival Ranch development, and potential parks/preservation land (associated with the Hassayampa River floodplain). In this segment, the route would also be sited within or would cross the Hassayampa River. Although the river is normally a dry riverbed, during certain times of the year there can be unusual and severe flooding. APS prefers to avoid placing structures in floodplains, to the extent possible. If floodplains cannot be avoided and structure foundations must be situated within a floodplain, a scour study would be completed and the foundations would include engineering measures to mitigate risk.

Proximity of the transmission line to the river would expose it to flood hazards, and if a flood event occurred, access to transmission facilities could be impaired. Repairs and maintenance could be delayed until flood water subsides and the ground dries. APS cannot predict what a typical restoration time would be required for repairs, as these failures are not typical; repair efforts would be hindered as long as flood conditions persist. Placement of towers in the riverbed would require deep, reinforced foundations (JBR 2011), which typically requires additional temporary disturbance at the time of construction. Between Joy Ranch Road and 235th Avenue, the line would cross vacant/undeveloped private land along the river; roughly following US 60, a 69kV transmission line, and railroad main line, eventually becoming parallel with SR 74. In the small community of Morristown, the Castle Well Airport is approximately 1,200 feet north of SR 74. In this location, the line would be perpendicular to the airport runway, potentially conflicting with flight patterns and other airport operations (APS 2008b).

The Maricopa County Zoning Ordinance (Maricopa County 2012) established the SR 74 scenic corridor overlay zoning district. The SR 74 Scenic Corridor encompasses lands within 500 feet of the ROW centerline from approximately 0.5-mile west of the Agua Fria River to 1.5 miles east of US 60. (However, according to the City of Peoria, the SR 74 Scenic Corridor within their jurisdiction does not apply.) The ordinance sets standards for residential and nonresidential uses. Standards are set for components such as setbacks, heights, and

screening. The ordinance states that utility lines are required to be buried. Utility lines are not defined in the ordinance; however, this requirement is clarified in the SR 74 Scenic Corridor Guidelines (Maricopa County n.d. c), a part of the Maricopa County 2020 Eye to the Future Comprehensive Plan. The guidelines state, "New utility lines should be located underground, except 69kV or greater electric transmission lines." Because this Project proposes a combined 230kV and 500kV transmission line, the ordinance does not apply to this Project. While the Scenic Corridor guidelines allow for a proposed 500/230kV overhead transmission line, it would impact on the visual resources of SR 74.

Right-of-way acquisition costs for The Hassayampa-Western SR 74 route are estimated to be $24 million. Construction costs are estimated to be $110 million as soil conditions would require deep foundations, and the route would have a relatively higher number of angle structures. Total Project costs are estimated at $134 million.

The screening process found that this route meets the purpose and need and APS' objectives for the Project, and it would require an RMPA for plan conformance for both establishing a utility corridor and VRM Class designation changes. It is technically feasible given the constraints of possible construction in the river floodplain and economically practical with an overall cost estimate of approximately 6 percent more than that of the Proposed Action. However, it was not found to be environmentally reasonable, because unlike the Proposed Action and Action Alternatives, this route would be sited within the Hassayampa River floodplain and could interrupt the continuity of small portions of one development in three different places. In addition, biological and cultural resources are expected to be more abundant within and adjacent to the Hassayampa River, thus potentially increasing the likelihood of impacts to these resources for this route. For this reason, the Hassayampa-Western SR 74 route was not carried forward for detailed analysis.

2.7.3 Hassayampa-Joy Ranch Road Route

2.7.3.1 Route Description

The Hassayampa-Joy Ranch Road route would replace an approximately 18-mile long segment of the Proposed Action route that extends from the Sun Valley Substation north to the Lone Mountain Road alignment, east to the 235th Avenue alignment, and north to the Joy Ranch Road alignment. All other segments of the route would remain within the ACC-certificated route and would follow the Proposed Action route. See **Figure 2.7-1**.

2.7.3.2 Route Overview and Screening

The segment between the Sun Valley Substation and Joy Ranch Road is described under **Section 2.7.2**, Hassayampa-Western SR 74 route.

The segment of this route on Joy Ranch Road between 275th Avenue and US 60 is mostly State Trust lands, with vacant/undeveloped private land and rural residential uses. The route would cross, or be in close proximity to, existing rural residences near west Rice Road and just west of US 60. This segment would cross 1.25 miles of State Trust lands and be adjacent to the proposed Broadstone Ranch community (APS 2008b). Local land use plans in this area call for low-density residential uses.

Between US 60 and 235th Avenue, where it meets the ACC-certificated route, this route would cross existing residences in Circle City and place the line immediately perpendicular to the north end of the Thunder Ridge Airpark, potentially affecting flight patterns and operations (APS 2008b), since the runway runs north and south. The owner of the Thunder Ridge Airpark has expressed strong opposition to the Project (JBR 2011).

Right-of-way acquisition costs for the Hassayampa-Joy Ranch Road route are estimated to be $23.5 million. Construction costs are estimated to be $105 million. Similar to the Hassayampa-Western SR 74 route, soil conditions along the Hassayampa-Joy Ranch Road route would require deep foundations; however, the Hassayampa-Western SR 74 route would be approximately one and one-half miles longer than the Hassayampa-Joy Ranch Road route, and would have a relatively higher number of angle structures. Total Project costs are estimated at $128.5 million.

The screening process found that the Hassayampa-Joy Ranch Road route meets the purpose and need and objectives for the Project, and it would require an RMPA for plan conformance for both establishing a utility corridor and VRM Class designation changes. It is technically feasible given the constraints of possible construction in the river floodplain and economically practical with an overall cost estimate of approximately 2 percent more than that of the Proposed Action. However, it was not found to be environmentally reasonable, because unlike the Proposed Action or Action Alternatives, this route would be sited within the Hassayampa River floodplain (previously described in **Section 2.7.2.2**) and could interrupt the continuity of small portions of one development in three different places. In addition, biological and cultural resources are likely to be possibly more abundant within and adjacent to the Hassayampa River, thus potentially increasing the likelihood of impacts to these resources for this route. Also, the Hassayampa-Joy Ranch route would potentially impact operations at the Thunder Ridge Airpark. For these reasons, this route was not carried forward for detailed analysis.

2.7.4 CAP Complete Route

2.7.4.1 CAP Background Information

The CAP, owned and constructed by the USBR, is a 336-mile long system of aqueducts (canals), tunnels, pumping plants, and pipelines that carry water across Arizona from Lake Havasu to southwest of Tucson. The CAP is designed to bring 1.5 million acre-feet of Colorado River water per year to Pima, Pinal, and Maricopa Counties (CAP 2011a).

The Central Arizona Water Conservation District (CAWCD) was organized to provide a means for Arizona to repay the federal government for the reimbursable costs of construction of the CAP, and is also responsible for the care, operation, maintenance, and management of the system. CAWCD's Land Department is responsible for managing all land associated with the CAP for the benefit of CAWCD and its water customers. Water delivery is CAWCD's primary mission; therefore all proposed uses of CAP land are evaluated to determine the overall effect on the CAP. Requests for land use require submission of an application to the CAWCD Land Department. In its land use decisions, CAWCD must abide by the agreements it has with the United States, and land use activities may not diminish, compromise, ignore, or subordinate any of the CAWCD's rights to manage CAP land uses (CAP 2011a). It is the

policy of the USBR and CAWCD to disallow lateral encroachment (i.e., other right-of-way uses along the CAP right-of-way) unless USBR determines a benefit for the CAP (CAP 2011b). However, CAWCD and USBR are supportive of the transmission line laterally encroaching on the CAP right-of-way finding appropriate CAP benefit for so doing (CAP 2011b).

The canal is not open for fishing or swimming to ensure maximum safety for animals and humans. However, when reasonable and possible, the USBR acquired sufficient land and located the fence to allow for a 10 to 20-foot wide trail to be developed outside the fenced right-of-way, generally along the downhill side of the canal (CAP 2011a).

2.7.4.2 Route Description

The CAP Complete route is an approximately 26-mile long segment that generally parallels the north side of the CAP canal from just west of the 267th Avenue alignment to the Navajo South transmission line corridor, then turns northeast and parallels the transmission corridor to the Morgan Substation. It would replace an approximately 34-mile long segment of the Proposed Action route that extends north from 275th Avenue to the Lone Mountain Road alignment, east to the 235th Avenue alignment, north to the Joy Ranch Road alignment, east to SR 74, east on SR 74 to about 99th Avenue, and southeast to the Morgan Substation. The only segment of the route that would follow the Proposed Action route and remain within the ACC-certificated route would be the segment in the CAP corridor between the Sun Valley Substation and 267th Avenue on the west end of the route. See **Figure 2.7-1**.

2.7.4.3 Route Overview and Screening

The average size of the canal near Lake Havasu City is 80 feet across the top, 24 feet across the bottom, and the water is 16.5 feet deep. The federal lands that contain the CAP, which are primarily administered by the USBR, vary in width. At the narrowest point between the two substations, the federal lands encompassing the CAP are approximately 230 feet wide (**Figure 2.7-2**). Near the eastern end of the portion of the CAP that falls within the Project Area, the canal is undergrounded through a tunnel on mountainous federal lands for approximately 3,752 feet. Private lands adjoin the federal lands that contain the CAP. In some areas, homes are built in close proximity to the CAP property boundary.

The proposed 500/230kV transmission line requires a 200-foot wide right-of-way, 100 feet either side of the centerline of the transmission line. In addition, the line would be required to be separated from the canal by a distance equal to the pole height, which would be a maximum of 195 feet. The capability of the federal lands containing the CAP to also contain the transmission line and its associated right-of-way would depend on the width of the CAP lands and the relative location of the canal within those lands. A minimum of 380 feet in width would be required to accommodate the CAP, the required separation, and the transmission line with its associated right-of-way. If the canal were located in the center of the CAP lands in areas where the width is 700 feet or wider, the federal lands could contain the CAP canal, the required separation, and the transmission line with its associated right-of-way.

In the area of the LAFB Auxiliary Field #1, northeast of the Sun Valley Substation, the CAP is located immediately adjacent to the northern end of the runway. The Auxiliary Field is

used for training operations where aircraft approach the Auxiliary Field from the northwest; dropping to within 150 to 300 feet above the ground; however they do not currently land at the Field.

Accident Protection Zones (APZs) have been identified by LAFB where history has shown the majority of flight accidents occur. The APZs correlate to the flight paths aircraft use to approach and depart from the Field (BLM 2011a). The CAP passes to the northwest of the Auxiliary Field, within an area designated as the Clear Zone for land planning purposes. The Air Force Base (AFB) does not allow above ground transmission lines within the Clear Zone and APZ I (BLM 2011a) for safety reasons. Therefore, the only way the transmission line along the CAP Complete route could traverse the LAFB Auxiliary Field #1 would be underground. Undergrounding the transmission line through LAFB would require close coordination with LAFB to avoid hazards and conflicts with Auxiliary Field #1 operations.

A ROW would be required on CAP lands administered by the USBR. The lands adjoining either side of the CAP lands are a mixture of State Trust and private lands. The CAP route passes through several residential areas at various stages of development ranging from conceptual to currently developed, including the Vistancia (final plat) and Lake Pleasant Heights (preliminary platting stage) developments, and the northern portion of Asante North, a large conceptual residential subdivision, both of which are zoned for development.

The route would be in close proximity to over 20 existing residences, some of which would be within 100 feet of the centerline of the transmission line route. The route is also near three smaller conceptual subdivisions (Vista Montañas, Tierra Rico, and Sierra Norte). The segments of the CAP Complete route that parallel the north side of the CAP canal would be adjacent to existing low-density rural residential properties and residential developments adjacent to the canal. There would need to be acquisition of at least four residences north of the CAP. Acquisition of lands, rights-of-way, or easements outside the CAP to achieve separation from the canal and/or allow for the necessary right-of-way for the transmission line would also increase the cost of the line. Acquisition of additional lands, rights-of-way, or easements would change the local land use.

The CAP Complete route would provide a 500kV transmission line between the Sun Valley and Morgan Substations. However, this route would not supply 230kV service to the northwest valley locations.

The federal lands containing the CAP do not describe a straight path; numerous turning structures would be required to follow this irregular route, which would increase the cost of constructing the transmission line. In the area where the CAP canal is undergrounded through a tunnel, the terrain is mountainous and may require special construction techniques (such as extensive use of helicopters to deliver supplies, equipment, and personnel, and use of the helicopter for erection and stringing of lines), which would be costly. Right-of-way acquisition costs for the CAP Complete route are estimated to be $41 million. Construction costs are estimated to be $140 million, for a total Project cost of $181 million.

The screening process found that this potential route does not meet the purpose and need for the Project as it would not access the northwest valley location with a 230kV line nor would it meet APS' objectives of co-locating the two lines for the Project. The overhead portion of this route is not considered to be technically feasible because LAFB does not allow overhead

transmission lines for safety reasons within the Clear Zone and APZs that would be crossed by the CAP Complete route.

Undergrounding the segment crossing LAFB, may be technically feasible under close coordination with the Base. The overhead portion of the CAP Complete route makes this route economically impractical, because it would require acquisition of additional lands, ROWs, or easements to supplement federal lands containing the CAP.

There are homes built in close proximity to the CAP that would need to be acquired. Additionally, numerous angle structures would be required. All of these characteristics would increase the overall cost estimate for overhead lines along the CAP Complete route approximately 43 percent more than that of the Proposed Action.

Since the overhead portion of the CAP Complete route would place high voltage transmission lines in close proximity to numerous existing residences, unlike the other alternatives already under evaluation that are located in more undeveloped settings, it is not considered environmentally reasonable. For all of the above reasons, the CAP Complete route was not carried forward for detailed analysis.

2.7.5 Luke Air Force Base Auxiliary Field #1 Bypass Route

2.7.5.1 Route Description

This route would bypass the LAFB Auxiliary Field #1 (**Figure 2.7-3**). The segment of the route on the west end would remain within the ACC-certificated route and would follow the Proposed Action route for about 15 miles from the Sun Valley Substation north to the Lone Mountain Road alignment, then east on the Lone Mountain Road alignment to the 235th Avenue alignment.

From the 235th Avenue alignment, there are three alignment options that are not within the ACC-certificated route.

LAFB Bypass Option A – (along CAP) - From 171st Avenue, the route would go east and then northeast along the CAP to the Morgan Substation.

LAFB Bypass Option B – (along Carefree Highway) - From the CAP, the route would run north on 171st Avenue to Carefree Highway, and then east and northeast to the Morgan Substation.

LAFB Bypass Option C – (along Cloud Road) - From the CAP, the route would run north on 171st Avenue to Cloud Road, and then east to the Morgan Substation.

2.7.5.2 Route Overview and Screening

Route Segments Common to All Options

The segment of the LAFB Auxiliary Field #1 route between 235th Avenue and US 60 is private land characterized by residences interspersed with vacant/undeveloped areas; approximately 56 residences are within 500 feet of the route. The route then nears/crosses US 60, a 69kV transmission line, and a railroad main line. Future land use includes low-density residential development in the Rancho Maria development north of the route, which has

preliminary plat approval. South of the route is the planned Walden Ranch, which currently has no plat approval. Mixed residential/commercial uses are proposed along US 60.The portion of this route between 235th Avenue and along US 60 between Lone Mountain Road and the CAP would occur within the Wickenburg Scenic Corridor (which is a designation defined by Maricopa County). It would also be close to existing communities along US 60 and, in particular, a number of small residential developments in the preliminary platting stage, including Rancho Caballeros Estates, Walden Ranch, Rancho Maria, and Grand Oasis. Broadstone Ranch, a large residential development in its conceptual phase, is partially crossed by the route just south of 235th Avenue. Acquisition of at least four residences would be required along Lone Mountain Road between 235th Avenue and US 60.

For a complete description of the CAP route, see **Section 2.7.4**. The portion of the route along the CAP between US 60 and 171st Avenue passes through the northern portion of a large conceptual residential subdivision called Asante North and near three smaller conceptual subdivisions called Vistas Montañas, Tierra Rico, and Sierra Norte. Existing low-density rural residential properties are also present south of the CAP, but are not part of a designated residential subdivision.

LAFB Bypass Option A (along CAP)

For a complete description of the CAP route, see **Section 2.7.4**. At several points along the CAP canal between 171st Avenue and the Navajo 500kV transmission line, existing residential developments are adjacent to the canal. There would need to be acquisition of at least four homes east of 171st Avenue along the north side of the CAP as the line avoids CAP retention/recharge ponds. The route passes through Vistancia (final plat) and Lake Pleasant Heights (preliminary platting stage), and would be in close proximity to over 20 existing residences. Some residences would be within 100 feet of the centerline of the transmission line route. In the area where the CAP canal is undergrounded through a tunnel, the terrain is mountainous and may require special construction techniques (such as extensive use of helicopters to deliver supplies, equipment, and personnel, and use of the helicopter for erection and stringing of lines.

Between the CAP and the Carefree Highway this route would be adjacent to the existing 500kV lines in the Navajo corridor. The area surrounding this segment is generally undeveloped. However, it is bordered on both sides by State Trust lands. Right-of-way acquisition costs for LAFB Bypass Option A are estimated to be $58 million. Construction costs are estimated to be $100 million for a total Project cost estimated at $158 million.

The final segment of the route between Carefree Highway and the Morgan Substation is characterized by vacant/undeveloped private land in close proximity to existing 500kV lines in the Navajo corridor and the existing Raceway Substation. This segment is also near the future site of the Peoria Airport and would traverse USBR land, which would require an additional federal right-of-way. Land use plans in this area call for low and medium-density residential, parks/recreation, and mixed uses.

LAFB Bypass Option B (along Carefree Highway)

Along 171st Avenue between the CAP and the Carefree Highway, this route would be adjacent to existing low-density residential development south of Dove Valley Road and the

western boundary of a conceptual residential subdivision named Marisol Ranch. This segment is bordered by State Trust lands.

The segment along the Carefree Highway between 171st Avenue and 165th Avenue is characterized by vacant/undeveloped land. Land use plans call for low-density residential uses, parks/preservation, and commercial development. The segment is bordered by State Trust lands and also borders the planned Saddleback Heights development, which does not have plat approval, but is planned for a master-planned community (6,052 acres). Saddleback Heights has a Specific Area Plan, Planned Community Development Zoning, and an executed development agreement between the developer and the City of Peoria.

Land along the Carefree Highway segment between 165th Avenue and the 500kV Navajo corridor is mostly vacant and undeveloped private land, interspersed with sections of State Trust lands. The route would bisect the planned residential developments of Saddleback Heights (no plat approval), Lake Pleasant Heights (preliminary platting stage), and a portion of Vistancia (final platting). Planned land uses include low-density residential use and parks/preservation to the north, low-density residential and parks/preservation within Vistancia, and parks/preservation. The general plan calls for a small area of commercial uses to the south. Within Lake Pleasant Heights, residential, golf course, and parks/preservation uses are planned. At the east end of the segment, low- and medium-density residential, parks/preservation, mixed use, and parks (including the Maricopa County regional trail) are planned. This alignment does not comply with the City of Peoria's comprehensive land use plans (City of Peoria 2010). Right-of-way acquisition costs for LAFB Bypass Option B are estimated to be $50 million. Construction costs are estimated to be $94 million for a total Project cost estimated at $144 million.

The final segment of the route between Carefree Highway and the Morgan Substation is described under Option A – CAP above.

LAFB Bypass Option C (along Cloud Road)

Along 171st Avenue between the CAP and the Carefree Highway, this route would be adjacent to existing low-density residential development south of Dove Valley Road and the western boundary of a conceptual residential subdivision named Marisol Ranch. This segment is bordered by State Trust lands.

Along 171st Avenue between the Carefree Highway and Cloud Road, this segment is bordered on both sides by State Trust lands.

Between 171st Avenue and the Morgan Substation, lands adjacent to Cloud Road are mostly private lands that are generally vacant and undeveloped, interspersed with sections of State Trust Lands. Local land use plans call for low to medium density residential uses and natural area with the Saddleback Heights and Lake Pleasant Heights developments (not approved). Near the substation, the route crosses an existing 230kV line and the New Waddell Canal.

Right-of-way acquisition costs for LAFB Bypass Option C are estimated to be $50 million. Construction costs are estimated to be $96 million for a total Project cost estimated at $146 million.

Screening

The screening process found that LAFB Auxiliary Field #1 Bypass route does not meet the purpose and need of the Project as it would not access the northwest valley location with a 230kV line nor would it meet APS' objectives of co-locating the two lines for the Project. It is technically practical and feasible under past and current practice and technology, and much of the lands specific to this route are undeveloped and/or in the preliminary plat stage. As far as economic feasibility, the overhead transmission line is economically practical and feasible under past and current practice and technology, but ROW acquisition costs for this route would be more than double those for the Proposed Action, while construction costs would be somewhat less. Economic practicality varies per Option. Under LAFB Bypass Option A, the overall cost estimate would be approximately 24 percent more than that of the Proposed Action. Under LAFB Bypass Option B, costs would be 14 percent more than the Proposed Action. Under LAFB Bypass Option C, costs would be 13 percent more than the Proposed Action. The LAFB Auxiliary Field #1 Bypass route is not considered to be environmentally reasonable, since the route between 235th Avenue and along US 60 would be near existing communities and at least 4 residences would need to be acquired. Also, under LAFB Bypass Option A, the Project would place a high voltage transmission line in close proximity to existing residences along the CAP, unlike the other alternatives already under evaluation that are located in more undeveloped settings. For all of the above reasons, the LAFB Auxiliary Field #1 Bypass route was not carried forward for detailed analysis.

2.7.6 Vistancia Bypass Route

2.7.6.1 Route Description

The Vistancia Bypass route would bypass the Vistancia master-planned community (**Figure 2.7-4**). A segment on the west end of the transmission line route would remain within the Proposed Action route for about four miles between the Sun Valley Substation and the 267th Avenue alignment.

The route would then continue outside of the Proposed Action route along the CAP canal corridor to the 171st Avenue alignment. From the 171st Avenue alignment, there are three options as follows:

Vistancia Bypass Option A – (along Cloud Road) - from the CAP, north on 171st Avenue to Cloud Road, then east to the Morgan Substation.

Vistancia Bypass Option B – (along Carefree Highway) - from the CAP, north on 171st Avenue to Carefree Highway, then east and northeast to the Morgan Substation.

Vistancia Bypass Option C – (along ACC-certificated route) - from the CAP, north on 171st Avenue to the ACC-certificated route, then east and southeast to the Morgan Substation.

2.7.6.2 Route Overview and Screening

Route Segments Common to All Options

At several points along the portion of this route between 275th Avenue and US 60, existing residential developments are adjacent to the CAP. Acquisition of residential properties would

likely be required. The route intersects the Clear Zone and APZ of the LAFB Auxiliary Field #1.

The route common to all options would include a segment of the CAP between US 60 and 171st Avenue. For a complete description of the CAP Complete route, see **Section 2.7.4**. A description of the CAP between US 60 and 171st Avenue is in LAFB Auxiliary Field #1 Bypass route, Route Segments Common to All Options.

Vistancia Bypass Option A (along Cloud Road)

See LAFB Auxiliary Field #1 Bypass route, Option C for a description of the segment along 171st Avenue between the CAP and the Carefree Highway, and the segment along 171st Avenue between the Carefree Highway and Cloud Road.

See the Cloud Road route for a description of the segment between 171st Avenue and the Morgan Substation.

Right-of-way acquisition costs for Vistancia Bypass Option A are estimated to be $31 million. Construction costs are estimated to be $145 million for a total Project cost estimated at $176 million.

Vistancia Bypass Option B (along Carefree Highway)

See LAFB Auxiliary Field #1 Bypass route, Option B for a description of this option.

Right-of-way acquisition costs for the Vistancia Bypass Option B are estimated to be $26 million. Construction costs are estimated to be $145 million for a total Project cost estimated at $171 million.

Vistancia Bypass Option C (along ACC-Certificated Route)

See LAFB Auxiliary Field #1 Bypass route, Option C for a description of the segment along 171st Avenue between the CAP and the Carefree Highway, and the segment along 171st Avenue between the Carefree Highway and Cloud Road.

Between Cloud Road and the ACC-certificated route along 171st Avenue, adjacent State Trust Lands are vacant/undeveloped. Land use plans for private lands south of SR 74 call for low-density residential uses. The proposed Saddleback Heights development (not approved) will include mixed uses, parks, and open space.

This route would require an RMPA for plan conformance for both establishing a utility corridor and VRM Class designation changes.

Right-of-way acquisition costs for the Vistancia Bypass Option C are estimated to be $24 million. Construction costs are estimated to be $146 million for a total Project cost estimated at $170 million.

Screening

The screening process found that the Vistancia Bypass route does not meet the purpose and need of the Project as it would not access the northwest valley location with a 230kV line nor would it meet APS' objectives of co-locating the two lines for the Project. The overhead line is not technically feasible because the route would require construction of the power line within the LAFB APZ 1 and Clear Zone, contrary to airfield operational restrictions. The

underground line may be technically feasible for the segment crossing LAFB, under close coordination with the Base. As far as economic feasibility, the overhead transmission line is economically practical and feasible under past and current practice and technology, however both ROW acquisition and construction costs under this route would be greater than the Proposed Action; construction costs would be nearly 40 percent more. It is not considered to be economically practical; the overall cost estimate varies amongst the Options, but ranges from 34 percent to 39 percent more than that of the Proposed Action. Undergrounding of the line further increases the cost of the Vistancia Bypass route.

The screening process found the Vistancia Bypass route to be environmentally reasonable although existing information on biological or cultural resources is limited for the segment along 171st Avenue between the CAP and Carefree Highway. Under Options A and B, between Carefree Highway and Cloud Road the route would be similar to environmental conditions along the Proposed Action and Alternative 2 routes. The Carefree Highway portion of this route would be the same as Alternative 3. Under Option C, along 171st Avenue, between Cloud Road and SR 74, the route would be similar to environmental conditions along the Proposed Action and Alternative 2 routes. The ACC-certificated route portion of this route would be the same as the Proposed Action. For the above reasons other than environmental, the Vistancia Bypass route was not carried forward for detailed analysis.

2.7.7 Westwing/Navajo Corridor Route

2.7.7.1 Background Information

The Western Electricity Coordinating Council (WECC) defines a "Common Corridor" as a contiguous right-of-way or two parallel right-of-ways with structure centerline separation less than the longest span length of the two transmission circuits at the point of separation or 500 feet, whichever is greater, between the transmission circuits (WECC 2008). The Westwing/Navajo corridor meets the WECC's definition of a common corridor.

2.7.7.2 Route Description

The Westwing/Navajo Corridor route is an approximately 28-mile long segment that extends east from the Proposed Action route near the 267th Avenue alignment, continues east parallel to the Westwing transmission line corridor, then turns northeast to follow the Navajo South transmission line corridor to the Morgan Substation. This route would replace an approximately 34-mile long segment of the Proposed Action route that extends north from near the 275th Avenue alignment to the Lone Mountain Road alignment, west on the Lone Mountain Road alignment to the 235th Avenue alignment, north on the 235th Avenue alignment to the Joy Ranch Road alignment, east to SR 74, east on SR 74 to about 99th Avenue, and southeast to the Morgan Substation. The only segment of the route that would follow the Proposed Action route and remain within the ACC-certificated route would be the segment in the CAP route between the Sun Valley Substation and the 267th Avenue alignment on the west end of the route. See **Figure 2.7-5**.

Figures 2.7-6 through **2.7-9** depict crossings and other constraints.

2.7.7.3 Route Overview and Screening

As it relates to the 500kV circuit; having the proposed 500kV line in the same common corridor as the two Palo Verde to Westwing (PV-WW) 500kV lines and the Mead-Westwing 500kV line would not be consistent with Good Utility Practice. The term "Good Utility Practice" refers to the need for utilities to fulfill their mission to deliver safe and reliable electric power to their customers in compliance with reliability standards developed by NERC (NERC 2011), which are enforced by NERC and the WECC.

The proposed 500kV transmission line and the PV-WW lines provide a similar purpose. Both projects start at the PV Hub and terminate in the Navajo South system. These lines are useful as a back-up for the other; i.e. having the 500kV transmission line in-service would provide a back-up if the PV-WW lines are lost, and the PV-WW lines would provide a back-up if the 500kV transmission line is lost. Having the lines in the same common corridor would subject them to the same hazards and risks with the potential to lose all three of the 500kV lines.

In general, a utility will try to limit the number of line crossings as part of Good Utility Practice and sound electrical design. Crossings add complexity and difficulty in terms of reliability, design, construction, and costs.

The opportunity for a multiple line outage is greatly increased in the area of line crossings due to the potential for the circuit crossing over another to fall onto the circuit underneath, causing both circuits to fail, thus adversely affecting reliability. While there is no guidance as to the maximum numbers of crossings that would be allowed, utilities strive to have as few line crossings and particularly multiple line crossings as possible.

If the line were to be routed within the PV-WW common corridor there would be at a minimum two separate line crossings and potentially as many as four line crossings. The crossings would involve five 230kV lines, one 345kV line, and three 500kV lines. Crossings would potentially occur:

- Where the 500/230kV transmission line would exit the Sun Valley Substation and travel directly to the east, and remaining south of the PV-WW lines the line would have to cross both PV-WW lines.
- Approaching the Westwing lines, the line would be routed north, either to the east or to the west of the Westwing lines. If it is on the east side of the Westwing lines the line would be required to cross one 345kV line and five 230kV lines. If the line is to the west of the Westwing lines it would have to cross three 500kV lines.

The transmission line would need to cross the two PV-WW lines again, plus the Mead-Westwing line. With the transmission line in the PV-WW common corridor it would be creating a less reliable system due to the proximity of the lines and the multiple line crossings, the potential for the lines to interact and affect/damage each other, and the potential for all lines to be damaged by the same event (such as a wildfire). The loss of multiple lines would be an extreme contingency that would create challenges to serving the load in the Phoenix Valley and possibly cause some load to be lost. In sum, because of the nature of the facilities involved, it would not be Good Utility Practice to put the transmission facilities in this common corridor.

A further consideration is the rated capacity of the Project if it were to utilize the PV-WW common corridor. Per the WECC Bylaws (WECC 2009), WECC coordinates regional planning within the Western Interconnection, which is the geographic area containing the synchronously operated electric grid in the western part of North America, which includes parts of Montana, Nebraska, New Mexico, South Dakota, Texas, Wyoming, and Mexico and all of Arizona, California, Colorado, Idaho, Nevada, Oregon, Utah, Washington and the Canadian provinces of British Columbia and Alberta (WECC 2009). WECC planning standards include consideration for impacts that could occur to other utility's transmission lines. The planning standards must be met to be authorized to build within the WECC footprint. If a new transmission line is proposed within a common corridor and it is determined that the new transmission line could adversely impact the existing lines in the common corridor, the proposed line could be "de-rated", which means it would be required to be a lower voltage (K. Bolton, WECC, personal communication 2011). It is anticipated that the WECC would significantly de-rate the capacity of the transmission line due to its proximity to the other existing lines within that common corridor.

Placing the transmission line outside the common corridor would alleviate concerns about de-rating of the line as described above. Following WECC's definition of a common corridor, the longest span of the transmission line would be approximately 1,400 feet, which is the distance the transmission line would have to be separated from the existing transmission lines in order to be considered to be outside the common corridor. Routing the transmission line outside the PV-WW common corridor to the north side would potentially result in as many as four line crossings. Crossings would potentially occur at the following locations:

- Initially crossing the Mead-WW line to get on the north side of the common corridor;
- Crossing back to the south in order to get around the landfill, bringing it across the three 500kV lines and two 230kV lines; and
- Once the line is on the south side of the common corridor, the situation would be similar to that described above.

Multiple line crossings would not conform to sound electrical design. While the transmission line would be outside the common corridor, it would still be susceptible to an event (such as a wildfire) that could cause damage to all the lines in that vicinity. Taken together, this situation would not constitute Good Utility Practice.

Land or ROW acquisition is another concern for this route. Several "choke" points exist along the Westwing/Navajo route. The first such point is along the Westwing portion of the route between the Sun Valley Substation and the Westwing Substation in the vicinity of the Northwest Regional Landfill. The current ROW is fully utilized in the area between the existing transmission lines and the landfill. There is physically no room to fit an additional transmission line in this constrained area. Building the line through the landfill is not an option; therefore a route around the landfill would be necessary. Another consideration in this area is the proximity to the LAFB Auxiliary Field #1 and the associated APZs. The AFB does not allow above ground transmission lines within the APZ (see **Section 2.7.4** for a complete discussion of the APZ; BLM 2011a). The transmission line would need to be routed through a narrow passage between Deer Valley Road and the southernmost corner of

the APZ. Technical feasibility of placing the line in this location would depend on the actual width of the passage and the amount of that passage currently encumbered by any right-of-way for Deer Valley Drive.

Some areas where the Westwing/Navajo route would cross U.S. 60/Grand Avenue are of concern as there is a possibility of needing to acquire residential properties. Regarding the Navajo segment between the Westwing Substation and the Morgan Substation, there are existing residential properties next to the existing transmission lines. This may again represent the need for acquisition of approximately 20 existing homes and final platted parcels. The Westwing/Navajo route would provide a 500kV transmission line between the Sun Valley and Morgan Substations. However, this route would not supply 230kV service to the northwest valley locations because this route would be too far south and a separate 230kV line would need to be constructed to reach these locations in the northwest.

Construction of the transmission line within the common corridor along the Westwing/Navajo route would consolidate similar land uses and disturbances in one linear area. The area currently contains varying numbers of 230, 345, and 500kV transmission lines; the addition of the new line would repeat the form and line of the existing facilities in the landscape. Within the common corridor (as defined by the WECC) the lands have likely been disturbed to a certain degree by the existing development, and additional development would occur in a previously disturbed area.

Construction of the transmission line along the Westwing/Navajo route but outside of the common corridor would also repeat the form and line of the existing facilities, just slightly further away. Outside the common corridor it is less likely that the lands have been previously disturbed; however, the proximity of this area to the existing common corridor reduces its quality for biological resources as there is existing and past adjacent disturbance, plus routine maintenance activities in the existing corridor likely make the adjacent areas less desirable for biological resources.

Right-of-way acquisition costs for the Westwing/Navajo Corridor route are estimated to be $122 million, primarily due to expected extensive severance payments. Construction costs are estimated to be $78 million for a total Project cost are estimated at $200 million.

The screening process found that the Westwing/Navajo Corridor route does not meet the purpose and need of the Project as it would not access the northwest valley location with a 230kV line nor would it meet APS' objectives of co-locating two lines for the Project. Additionally, it is anticipated that the WECC would significantly de-rate the capacity of the transmission line due to its proximity to the other existing lines within that common corridor. Also, if constructed inside the existing WECC corridor, de-rating would mean the Project no longer provides the transmission capacity required by APS. The Westwing/Navajo Corridor route is not technically or practically feasible inside or outside the corridor; inside the corridor WECC would significantly de-rate the capacity of the line due to its proximity to the other existing lines within that common corridor, thus the Project would no longer provide 500kV transmission capability. Outside the corridor, multiple crossings would not be consistent with Good Utility Practice, making it feasible but not practical.

This route is not economically practical and feasible even though construction costs under the Westwing/Navajo Corridor route are estimated to be approximately 25 percent less than

the Proposed Action. ROW acquisition costs are estimated to be nearly five times more due to extensive severance payments, so the overall cost estimate for this route would be approximately 64 percent more than that of the Proposed Action. Also, the screening process did not find the Westwing/Navajo Corridor route, to be environmentally reasonable due to the potential need to acquire existing residences.

For the above reasons other than environmental, the Westwing/Navajo Corridor route was not carried forward for detailed analysis.

2.7.8 Westwing/Grand Avenue-Navajo 500/230kV Separation

2.7.8.1 Route Description

The Westwing/Grand Avenue-Navajo 500/230kV Separation route (**Figure 2.7-10**) would locate the 500/230kV line together along the Westwing transmission line common corridor from the Proposed Action route just west of the 267th Avenue alignment to US 60, for a distance of about 13 miles. At US 60, the 230kV line and the 500kV line would separate.

The 500kV line would continue along the Westwing transmission line corridor, and then turn northeast along the Navajo South transmission line corridor to the Morgan Substation for a distance of about 13 miles.

At Grand Avenue, the 230kV line would turn northwest to parallel US 60/Grand Avenue and an existing 69kV line to the CAP canal corridor. The 230kV line would then parallel the CAP canal to the 171st Avenue alignment.

From the 171st Avenue alignment there are three options.

<u>230kV Separation Option A</u> - Continue north on the 171st Avenue alignment to the Carefree Highway alignment, follow the Carefree Highway alignment east to the Navajo South transmission line corridor, then turn northeast and follow the transmission line corridor to the Morgan Substation. The total length of this optional segment would be about 13 miles.

<u>230kV Separation Option B</u> - Continue north on the 171st Avenue alignment to Cloud Road, then follow the Cloud Road alignment east to the Morgan Substation. The total length of this optional segment would be about 14 miles.

<u>230kV Separation Option C</u> - Continue north on the 171st Avenue alignment to the Proposed Action route at SR 74. The total length of this optional segment would be about 16 miles. This route option would require an RMPA for plan conformance for both establishing a utility corridor and VRM Class designation changes.

2.7.8.2 Route Overview and Screening

Descriptions for the Westwing/Navajo, CAP Complete, Carefree Highway, Cloud Road, and ACC-certificated route are described in the previous sections, with exception of the US 60 south segment. This segment (see **Figure 2.7-10**, Option C) follows US 60 from the point where it intersects the Westwing/Navajo common corridor to the point it intersects the CAP. This segment traverses primarily private lands, except for a small portion of <u>S</u>tate <u>Trust</u> lands near the intersection with the CAP.

The 230kV transmission line route along US 60 would be in proximity to several residential developments north and south of US 60, which are in various stages of planning.

This route would be on the northern boundary of the Maricopa County established McMicken Dam Scenic Corridor between the point where US 60 intersects the Westwing corridor, approximately one mile to the intersection of US 60 and Deer Valley Road. The scenic corridor guidelines state that new utility lines in this area should be underground (Maricopa County no date [n.d. a]). A description of undergrounding is provided below under that heading. US 60 in this area is also part of the Wickenburg Scenic Corridor, which currently has no restrictions on transmission lines within the corridor.

The 230kV transmission line would parallel an existing 69kV transmission line. Visually, the transmission line would repeat the form and line of the existing line, and would likely involve a different type of structures from the existing line in order to accommodate the higher voltage line. Separation of the 500/230kV transmission line would require construction along two different routes. The acquisition of at least two commercial and two residential properties would be required along US 60.

Right-of-way acquisition and construction costs for the Westwing/Grand Avenue-Navajo 500/230kV Separation route options would include land acquisition costs and potential severance payments for separate corridors, and costs for additional structures, equipment and construction for separated lines. Options A and B right-of-way costs are estimated to be $129 million and construction costs are estimated to be $156 million.

Option C right-of-way costs are estimated to be $128 million and construction costs are estimated to be $157 million. Total Project costs are estimated at $285 million for all options.

The screening process found that the Westwing/Grand Avenue-Navajo 500/230kV Separation route does not meet the purpose and need of the Project as the 230kV transmission line would be separated from the 500kV transmission line; APS' objectives requires co-location of the lines.

Additionally, no portions other than the US 60 portion would be technically practical and feasible; WECC would significantly de-rate the capacity of the Westwing portion, inside the corridor due to its proximity to the other existing lines within that common corridor, thus the Project would no longer provide 500kV transmission capability. The Westwing portion outside the corridor would require multiple crossings for the 500kV line as described for the Westwing/Navajo Corridor Route, above. Multiple crossings would not be consistent with Good Utility Practice, making this route feasible but not practical.

There would be no known technical issues with the US 60 portion of this route for the 230kV transmission line. This route is not economically practical and feasible since separation of the 230kV line from the 500kV line would involve project costs for separate infrastructure and rights-of-way, resulting in a 66 percent increase in construction costs over the Proposed Action. Acquisition of ROWs in separate corridors and severance payments would increase the cost of ROW acquisition 133 percent above the Proposed Action. The overall cost estimate for the Westwing/Grand Avenue-Navajo 500/230kV Separation route would be 124 percent more than the Proposed Action.

Lastly, the Westwing/Grand Avenue-Navajo 500/230kV Separation route is not environmentally reasonable because the acquisition of approximately 20 existing homes and final platted parcels would be required in the vicinity of US 60. For the above reasons, other than the technical practicality of the US 60 portion of the route, this route was not carried forward for detailed analysis.

2.7.9 CAP Canal Underwater 500/230kV Route

2.7.9.1 Route Description

The CAP Canal Underwater route calls for installation of the 500/230kV circuits by means of a power cable in or under the bed of the CAP canal. Installation could involve specific segments of the canal, or the entire length of the canal from the Sun Valley Substation to the Morgan Substation.

2.7.9.2 Route Overview and Screening

Submarine cable for electric transmission lines is a proven technology that is used in various parts of the U.S. where ocean beds, lakes or rivers are crossed. However, APS is not aware of any submerged transmission facilities that have been placed in canals such as the CAP anywhere in the world. The cost per mile for construction of an underwater transmission line is substantially more than a traditional overhead line.

This route would require the approval of the CAWCD. The CAWCD has indicated that placement of power cables in the CAP canal would have a negative impact on the District's canal maintenance program. Because the CAWCD has rejected the route, no cost estimates were provided for this alternative by APS.

The screening process found that this route does not meet the purpose and need of the Project as it would not access the northwest valley location with a 230kV line nor would it meet APS' objectives of co-locating the two lines for the Project. The CAP Underwater route is not technically practical or feasible as underwater construction in a canal is not a proven technique. Canal maintenance would be impacted as well. The economic practicality and feasibility of this route is not known, but the cost per mile for construction of an underwater transmission line is substantially more than a traditional overhead line. There would also be requirements for ongoing access to and maintenance of the canal. Since underwater canal construction is an unproven approach, it may or may not be environmentally reasonable; it may have impacts as yet unidentified.

For the above reasons and the rejection of this alternative by the CAWCD, the CAP underwater route was not carried forward for detailed analysis.

2.7.10 Underground a Portion or All of the Project

2.7.10.1 Technology Background Information

The source for the information provided in this section, including types of underground technology, past and present uses, and cost is the "Technology and Environmental Assessment Guide on Underground HV Power Transmission (Year 2000 update), which is

referenced in the Antelope-Pardee 500-kV Transmission Project EIR/EIS, Appendix 1, Alternatives Screening Report (USFS 2006).

There are four primary underground transmission technologies:

High Pressure Fluid-Filled (HPFF) Cable, which is also called a pipe-type or high pressure oil-filled system, has historically been the most commonly used underground transmission cable in the United States, accounting for approximately 80 percent of the existing underground transmission lines in this country. Since its development over 50 years ago, this system has proven to be very reliable.

In this design, the three high-voltage, individually insulated cables are contained in a coated and cathodically protected steel pipe (**Figure 2.7-11**). In addition to providing mechanical protection and preventing the ingress of moisture, the pipe is a pressure vessel for maintaining 200 pounds per square inch gage (psig) nominal operating pressure on dielectric fluid that surrounds the cables in the pipe.

The fluids may be petroleum based or synthetic, and function to ensure that there are no electrical discharges in the oil impregnated paper insulation surrounding the individual cables.

A pressurizing plant is required to maintain dielectric fluid pressure and accommodate pipe volume changes under all load conditions. A source of power must be available for each of the required pressurization plants separate from the primary cable system. This cable type requires the most intensive construction process due to the combination of its shorter splicing (connecting cable segments) interval with the associated underground splicing vaults, and the need for above ground pressurization plants. Trenches containing the pipe are typically backfilled with a special thermal backfill to aid in dissipating heat from the cables.

Underground splicing vaults consist of underground rooms approximately 10 feet wide by 10 feet deep by 35 feet long and located every 800 to 1,600 feet along the line (**Figure 2.7-12**). Ground disturbance area along the length of the line would be approximately 10 to 15 feet wide. This area remains an access way for monitoring of facility operations. A transition station, approximately 80 feet high and with a footprint of approximately two to three acres, would be required at each end of the underground segment to transfer the 500/230-kV transmission line from overhead to underground and vice versa.

For the HPFF cable option, additional space would be required at the transition station for the fluid pressurization equipment. In addition, a distribution overhead power line(s) would need to be constructed to provide power to the pressurization station(s).

Self-Contained Fluid-Filled (SCFF) cable, which is sometimes simply called self-contained cable, provides good long-term reliability and is higher rated than pipe-type cables, if directly buried. This type of underground line includes three independent cables. The cable for each of the three phases consists of a hollow conductor, which is filled with dielectric fluid in an aluminum sheath covered by a plastic jacket. The metallic sheath serves both as a hermetic moisture seal and as a pressure containment vessel. SCFF cable systems use low viscosity synthetic cable dielectric fluids that operate at a pressure of 75 psig. While dielectric fluid is present, it is in smaller quantities than HPFF cables.

This cable type can be placed in a duct bank or can be placed using direct burial. Elevation changes along the cable route can significantly affect the fluid pressure, therefore fluid reservoirs and stop joints are required along the length of the underground cable circuit (typically at each splice location) to segregate the cable into several hydraulic zones.

Cable splicing (joint) pits of dimensions similar to a cable vault are excavated along the trench alignment at splicing locations. The joint pits have a concrete base and a temporary all-weather cover. Once the splice is complete the joints are sealed in waterproof casing and the pit is backfilled. A concrete cap is placed a few feet below grade for the entire trench section as mechanical protection from dig-ins. Stop joints sectionalize the cable and limit fluid pressure as well as the amount of fluid that would be lost in the event of a cable breach. Fluid reservoirs that allow for expansion and contraction of the fluid are located every 800 to 1,600 feet along the alignment, frequently at stop joints.

Similar to the HPFF cables, the SCFF cable would be backfilled with a special thermal backfill, and would require a 10- to 15-foot wide ground disturbance that would remain for access along the cable and to the fluid reservoirs.

Similar to SCFF cables, Solid Dielectric Transmission Cable consists of three individual cables, each of which include cable insulation, usually made of cross-linked polyethylene, (XLPE), in a metallic shield or sheath, and plastic jacket (**Figure 2.7-13**). As described above, the metallic shield prevents exposure of the cable insulation to water. Although ethylene propylene rubber (EPR) insulation has been used for some transmission class solid dielectric cables, XLPE insulation has been used exclusively for solid dielectric cables with system voltages above 138kV. Unlike HPFF or SCFF, no dielectric fluid or pressurizing equipment is required, XLPE circuit repair is quicker and often simpler than for HPFF systems; and cable system design, operation, and maintenance are less complex than systems with pressurized dielectric fluid.

Similar to SCFF described above, this cable type can be placed in a duct bank or can be placed using direct burial. The trench construction for XLPE cables would be similar to SCFF installations, except XLPE cable joints are more complex, requiring the use of splicing vaults, as described for HPFF cables.

Compressed Gas Insulated Transmission Lines (CGTL) have primarily been used in applications such as short dips in overhead lines or relatively short substation connections to overhead lines. In this type of transmission line, epoxy spacer insulators support the high voltage conductors inside the enclosures that are filled with sulphur hexaflouride (SF6) or a mixture of SF6 and nitrogen gases.

CGTL systems have power transfer capabilities that are significantly higher than other types of underground transmission cables, have relatively simple system design, and relatively low magnetic field levels. The CGTL can be installed in concrete-covered trenches, directly buried, or installed in tunnels. The CGTL are typically manufactured in straight and rigid sections ranging in length from 40 to 70 feet with field welds required to connect the sections.

The capacitive characteristics of the underground cable insulating material and the close proximity of the cables to one another results in causing the cable system to introduce high capacitive reactive loads onto the electrical system. These capacitive reactive loads would

have to be offset with inductive compensation at above ground compensation stations located every 7 to 20 miles along the transmission line route. A further consideration is that the electrical system as a whole may or may not be capable of reliably accommodating these large reactive power loads, making the integration of long underground powerlines into the overall power grid questionable or infeasible.

HPFF and SCFF underground transmission systems are considered mature and well developed at lower voltages. HPFF underground transmission cable systems with system voltages ranging from 69kV up to 345kV have been in commercial operation for over 35 years. HPFF cable systems with rated system voltages up to and including 765kV are commercially available and have passed long-term qualification tests.

Application of the SCFF cable type within the United States has largely been limited to the 115/138kV range, with only a few miles of 220kV installed commercially. While this type of cable has been used extensively outside of the United States, it currently makes up less than five percent of the transmission cable in this country. This cable has been manufactured for system voltages from 69kV up to 500kV. The only installation of this cable type at 500kV within the United States is a short section of cable at the Grand Coulee Hydroelectric Plant in Washington, where approximately four miles of cable was used for each of the six generators for a total of 24 miles. The cable runs through galleries in the dam and then a tunnel to reach the switchyard. Long submarine cable circuits are one application where this type of cable has definite advantages over the other types of cables. This is due to the fact that there are overseas submarine cable factories that have the capability of manufacturing this type of cable in lengths exceeding five miles, thus avoiding the necessity of having field- or factory-installed joints. These systems typically use direct current (DC) technology due to the lengths involved. An example is the 138 kilometer (80-mile) 350kV DC submarine link between Denmark and Norway.

XLPE underground transmission system cable has been available for system voltages up to 138kV since the early 1970s; however, there was a lack of widespread acceptance in this country because of reliability problems with the first generation cable and accessories for some of the initial installations. As the newest technology, XLPE systems have begun to have installations with long enough service life to increase utility confidence in their reliability. Recent years have seen substantial improvement in XLPE systems and acceptance and adoption for higher transmission voltages. Currently, the number of 220kV solid dielectric cable installations in the United States is increasing with approximately 50 circuit miles in service.

Utility acceptance in the United States has grown relatively rapidly (last five years) for use at 220kV and 345kV. For example, a California utility proposed a project using over 12 miles of 220kV XLPE underground transmission cable in September 2002 and a New England utility is presently (as of 2006, the date of the source material) constructing a 345kV line which includes 2.1 miles of XLPE underground transmission cable with a second phase of the project proposed with a 5.5-mile XLPE alternative segment. Internationally, a number of XLPE systems up to 420kV have been installed including a 13.75-mile and 6.25-mile direct buried loop in Copenhagen, Denmark, which was completed in 1997. The first long-distance 500kV XLPE lines were installed in Tokyo, Japan, in 2000. This XLPE system is two circuits (with a third planned) and was installed in a cable tunnel and in ducts beneath bridge

decks for 25 miles. As only one 500kV XLPE system has been installed in the world, and was specially installed in a cable tunnel (and ducts), high voltage XLPE technology has scant operating history that can serve as a basis for demonstrating reliability for the APS Project. However, XLPE cable has been successfully installed and operated for long lengths at lower voltages and has been shown to be technically feasible for a 500kV installation since the fundamental technology is the same. Use of XLPE cable would require superior quality control during manufacturing, as a key reliability factor for the cables is the purity of the XLPE insulating material. In addition, during installation of the XLPE cable, special skills and proprietary equipment associated with the cable supplier may be required for cable splicing (joining of two segments in a splicing vault).

CGTL underground transmission system technology has primarily been used in applications where high power transfer is required over short distances, such as short dips in overhead lines or relatively short substation connections (get-aways) to overhead lines. Relatively short lengths (i.e., less than 1,000 feet) of 100 percent SF6 compressed-gas underground transmission lines have been installed in the United States, Japan, and European countries for several decades.

One 275kV CGTL system, installed in a tunnel with other utilities in Nagoya, Japan, is two miles long. The system voltages for these installations have been from 138kV up to 765kV. The first commercial application of the second generation CGTL technology was the construction of a “dip” in an existing 400kV overhead transmission line in Geneva, Switzerland, in 2000. Because it is not proven for more than two miles, CGTL technology would have significant technical feasibility issues for greater distances. Another particularly challenging issue for assembly of CGTL would be creating a dust-controlled environment to avoid particle pollution of the insulating gas. The lack of installation and operation information for buried CGTL transmission over any significant distance is as much a practicality issue as a feasibility issue.

As a result of the considerable construction activities associated with undergrounding transmission lines, the associated costs are substantially greater than the cost of installing overhead transmission lines. Increased cost estimates range from approximately 10 times more expensive (USFS 2006) to 12 to 17 times more expensive (National Grid 2009). Installation of certain types of technology may require special skills and proprietary equipment associated with a cable supplier, which contribute to the increased cost. APS estimates installation of an underground transmission line would be 10 to 30 times that of a similar overhead transmission line.

While undergrounding of lower voltage transmission lines is fairly common in the United States, there are limited instances where 500kV transmission lines have been undergrounded, in the United States and other areas of the world. The referenced 500kV transmission line in Washington is within the galleries of the Grand Coulee Dam, and in Japan the line is within a cable tunnel and ducts – neither are buried. While direct burial of 500kV transmission lines appears to be technologically feasible, no information available indicates it has been put into practice, and indicates that application of the technology is unproven.

Some undergrounding systems may require special skills or proprietary equipment, which would increase the installation, operation, and maintenance costs. Fluid-filled systems

require pressurization plants, which are additional infrastructure to construct, operate, and maintain, which would also increase Project costs.

Maintenance of underground transmission lines is more difficult than overhead lines because when a problem occurs underground it can be very difficult to identify the exact location of the problem. When the problem is located, the segment of cable on which the problem occurred must be removed and replaced. This process involves additional excavation and construction (USFS 2006). APS estimates a fault or failure of a 500kV or 230kV underground cable could be anticipated to take two to six weeks per segment of cable to conduct a repair. A repair to a segment of 500kV overhead transmission line by comparison can take from hours to several days. The economic ramifications are two-fold. Failures in underground transmission lines are fundamentally more difficult and time consuming to isolate and repair, which would be a more costly process. Second, because repairing underground transmission lines is more time consuming than overhead lines, there would be economic costs to consumers of the electricity lost during periods of outages.

While in operation, the land above the underground cables must remain free from secondary surface development, including overhead transmission lines, in order to accommodate operation and maintenance activities (USFS 2006). Additionally, infrastructure, such as vaults and pressurization plants, would have a long-term footprint for the Project.

2.7.10.2 Route Description

There are two general options for undergrounding the Sun Valley to Morgan 500/230kV transmission line; underground the entire line along any of the routes under consideration or underground portions of the transmission line in discrete areas for specific purposes (for example, undergrounding the line through the LAFB Auxiliary Field #1).

2.7.10.3 Route Overview and Screening

The following are major components of a typical underground design and represent only the generalized requirements necessary for an underground 500kV installation, and are not specific to any technology or application.

- An underground 500kV cable system would consist of up to three cables per phase (total of nine cables) in order to match the capacity of the overhead transmission line.
- Each set of three phase cables would be installed in three separate duct banks. Duct banks would require separation of 15 feet. There would be four conduits in each duct bank (one spare conduit).
- For the 500kV HPFF design APS would require the installation of two separate trenches separated by a minimum of 15 feet measured from center line of trench to center line of trench. The cable would be installed in one of the 10-inch steel pipes, and the other 10-inch steel pipe located in the same trench would be the return pipe to circulate the oil. For the required amperage it may be necessary to have multiple cables and return pipes. APS envisions two pumping plants and two forced cooling units.

- The 230kV underground installation with a 3,000 amp rating could be achieved with a XLPE installation. Depending on the size of cable, it may require two or more trenches separated by a minimum of 10 feet.
- Concrete encased duct bank packages would be covered with up to eight feet of thermal backfill.
- Permanent access (approximately 14 feet in width) would be graded along the path of the duct bank packages.
- Total construction disturbance width of the underground duct bank packages with the access road is estimated to be approximately 80 feet in width for the length of the route.
- Splicing of the cable would be required approximately every 800 to 1,600 feet. Splicing would be performed inside vault structures. Vault dimensions would be approximately 12 feet wide by 40 feet long by 9 feet deep, dependent upon the cable manufacturer design requirements.
- Vaults would be covered with up to eight feet of thermal backfill.

Underground to overhead transition stations would be required at each end of the underground transmission line (similar in appearance to a substation; **Figure 2.7-14**). Each transition station would be located on a two to three acre area and would require structures approximately 80 to 100 feet in height.

Use of underground technology within some of the routes on federal land administered by BLM would still require amendment of the Bradshaw-Harquahala RMP (BLM 2010b) to allow a utility ROW on public land. In addition, an RMPA might also be required to change current VRM Class designations if any associated aboveground facilities did not meet the current VRM Class designation objectives.

Surface disturbance, the presence of infrastructure, and sporadic activity along the route would have varying degrees of impact on natural resources and ecosystems. However, underground transmission line systems eliminate the potential for avian collision and/or electrocution.

Utilization of underground transmission lines would not involve the same visual intrusion of above ground transmission lines and poles in the landscape; however, structures 80-100 feet tall would be required at the transition stations. Underground technology also would be visible as ground disturbance along the route, access roads/routes, splicing vaults, and pressurization plants.

The use of fluid-filled and compressed gas underground technology creates environmental concerns about release of fluids or gasses into the environment. Petroleum-based fluids present environmental problems similar to those normally associated with oil spills (Shrieve n.d.). SF6 is a heavy gas that should not be vented to the atmosphere except through appropriate scrubbers in accordance with federal, state, and local regulations (Proline n.d.).

The screening process found that the option of undergrounding the transmission line meets the purpose and need of the Project since the use of underground technology could be used to

meet APS' Project objectives and allow the BLM to respond to APS' application for access across public lands.

Although the HPFF, SCFF, and XLPE underground transmission technologies are considered mature and reliable by some industry experts (USFS 2006), it is the view of APS that these technologies are not mature at the 500kV voltage. In addition, there are no known buried 500kV transmission lines, and none covering the distances proposed, therefore these technologies are not technically feasible and practical. CGTL may be feasible only for short distances, and thus may not be as practical as the other technology options. The option of undergrounding the transmission line is not economically practical and feasible for the entire Project as APS estimates the cost of undergrounding a transmission line ranges from 10 to 30 times that of overhead lines; specialized skills and proprietary technology are required; thus rendering undergrounding of the entire Project impractical. However, this option as applied to portions of the Project may be economically practical and feasible; while the cost increase of undergrounding the line even for a relatively short distance would be high, it may provide a practical option under certain circumstances.

This underground option is also not environmentally reasonable for all of the Project because undergrounding transmission lines involves ground disturbance along the entire route, which would be greater than ground disturbance associated with overhead lines. Depending on the route, this may or may not be an issue. The disturbance footprint of facilities includes pressurization plants at either end, vaults every 800 to 1,600 feet, access roads to these facilities, and electric distribution lines to pressurization plants. The use of fluid-filled and compressed gas for underground technology creates environmental concerns about release of fluids or gasses into the environment. If applied to portions of the Project, environmental concerns associated with undergrounding the line would exist even for a relatively short distance. APS does not believe that undergrounding a 500kV line for any distance is practical or meets the objectives of the company for reliability.

Although consistent with the purpose and need of the Project, the option of undergrounding the transmission line was not carried forward for detailed analysis for the reasons described above.

2.7.11 CAP to Grand Avenue

2.7.11.1 Route Description

The CAP to Grand Avenue route would replace an approximately 20-mile long segment of the Proposed Action route that extends north on the 235th Avenue alignment from US 60 to the Joy Ranch Road alignment, east to SR 74, east on SR74 to about 99th Avenue, and southeast to the Morgan Substation. The segment of the route that would follow the Proposed Action route and remain within the ACC-certificated route would extend east and north from the Sun Valley Substation to the Lone Mountain Road alignment, west on the Lone Mountain Road alignment to the 235th Avenue alignment, and north on the 235th Avenue alignment to US 60. See **Figure 2.7-5**.

2.7.11.2 Route Overview and Screening

The ACC-certificated route and the CAP Complete route are described above, and account for the description of the CAP to Grand Avenue route, with exception of the US 60 interior segment. This segment follows US 60 from the point it intersects the ACC-certificated route at 235th Avenue to the point it intersects the CAP. This segment traverses primarily private lands, except for a small portion of State Trust lands near the intersection with the certificated route. US 60 in this area is also part of the Wickenburg Scenic Corridor. The Maricopa Zoning Ordinance (Maricopa County n.d. b) does not provide specifications for utilities within the scenic corridor.

Siting of the 230kV transmission line along the US 60 segment would be in proximity to several residential developments north and south of US 60, which are in various stages of platting. The transmission line would parallel an existing 69kV transmission line. Visually, the transmission line would repeat the form and line of the existing line, and would involve a different type of structure from the existing line in order to accommodate the higher voltage, which may make it more visible or pronounced in the landscape. Private property acquisition in the vicinity of Wittmann may be required.

Right-of-way acquisition costs for the CAP to Grand Avenue route are estimated to be $63 million. Construction costs are estimated to be $106 million for a total Project cost estimated at $169 million.

The screening process found that the CAP to Grand Avenue route meets the purpose and need of the Project since it would provide 230kV service to the northwest valley location, and thus would meet APS' Project objectives, and would allow the BLM to respond to APS' application for access across public lands. The segment within the ACC-certificated route and the US 60 segment of this route are technically feasible and practical. See descriptions above for CAP and Underground alternatives in **Sections 2.7.4** and **2.7.10**. This route is not economically practical and feasible as the overall cost estimate for the CAP to Grand Avenue route using overhead transmission line would be 33 percent more than the Proposed Action. This route is environmentally reasonable.

Although consistent with the purpose and need of the Project, technically feasible and practical in part, and environmentally reasonable, the CAP to Grand Avenue route was not carried forward for detailed analysis for the economic and other reasons described above.

2.7.12 Wittmann/Circle City Bypass Route

The Wittmann/Circle City Bypass route was recommended during public review of the Draft EIS after its publication. This route was designed to:

- Minimize the amount of State Trust lands impacted by the ROW
- Not pass near the Thunder Ridge Airpark
- Not pass near residences in the communities of Wittmann and Circle City, or along Cloud Road
- Achieve a substantial reduction of turning structures required for the Project
- Avoid amendment of the Bradshaw-Harquahala RMP

2.7.12.1 Route Description

From the Sun Valley Substation location, the Wittmann/Circle City Bypass route would follow the Proposed Action/Preferred Alternative route north to Lone Mountain Road. At the intersection with Lone Mountain Road where the Proposed Action/Preferred Alternative would turn right, the Wittmann/Circle City Bypass route would continue north to one-half mile north of the Joy Ranch Road alignment, where it would turn east. At 243rd Avenue, the route would turn north. The route would turn southeast at the intersection with SR 74, following the south side of the highway until the point that it would intersect with the Alternative 3 alignment. The route would then follow the Alternative 3 alignment (south on 179th then east on the Carefree Highway alignment) to the Morgan Substation (**Figure 2.7.10**). The Wittmann/Circle City Bypass route would be approximately 41.6 miles long.

2.7.12.2 Route Overview and Screening

Because the Wittmann/Circle City Bypass route would be northwest of the Proposed Action/Preferred Alternative route, impacts to Thunder Ridge Airpark would be eliminated. By routing the ROW along the south side of SR 74 between 243rd and 179th Avenues, the route avoids the impacts to the State Trust lands that the Sub-alternative route alleviated; offering an alternative to the Sub-alternative route. However, more acres of State Trust lands would be impacted by this route due to its increased length compared with the Action Alternative routes.

From the Sun Valley Substation location to Lone Mountain Road, the Wittmann/Circle City Bypass route would be identical to the Proposed Action route. From the intersection of 179th Avenue and SR 74 the route would essentially be the Alternative 3 route. Because these portions of the Wittmann/Circle City Bypass route are contained in alternatives already analyzed in the Final EIS, there would be no environmental factors for elimination of these portions of the route.

Using aerial photography it was determined that near the intersection of 275th Avenue and one-half mile north of Joy Ranch Road there are approximately 22 structures within 1,000 feet of the centerline. One structure would be within the 200-foot ROW, but does not appear to be a residence. Seven of the structures within 1,000 feet of the centerline appear to be residences, the closest of which would be approximately 260 feet from the centerline. Impacts to visual resources would range from moderate to high, with high visual impacts occurring in the vicinity of existing residences and along SR 74 in particular. While the SR 74 Scenic Corridor guidelines (Maricopa County n.d. c) allow for a proposed 500/230kV overhead transmission line, it would have a major impact on the visual resources of SR 74.

The Roesner Ranch airstrip is approximately one mile long running roughly north and south, slightly off axis to the southwest. The Wittmann/Circle City Bypass route ROW would encroach upon the southern turn-around of the air strip. The ROW on the southern end of the airstrip would be perpendicular to the airstrip. Similar to the Thunder Ridge Airpark under the Proposed Action, impacts to the Roesner Ranch Airstrip would be anticipated to be major and adverse.

The total cost for the Wittmann/Circle City Bypass route would be $159.4 million. This route would involve increased private land acquisition over the Proposed Action route, particularly

due to following the Alternative 3 route across private property along the Carefree Highway alignment, resulting in a nearly 40 percent increase in ROW acquisition cost over the Proposed Action route. The fact that the Wittmann/Circle City Bypass route would be approximately eight percent longer than the Alternative 3 route, would include one more known turn than the Alternative 3 route, would be in proximity to the Hassayampa River, and would present challenges crossing US 60 in the proposed location, all of these factors would increase construction costs; construction costs are estimated to be 20 percent more than the Proposed Action route. Overall, this route would cost an estimated 26 percent more than the Proposed Action route.

The Wittmann/Circle City Bypass route would meet the purpose and need for the Project and it appears to be technically practical and feasible. However, the overall cost of the route is estimated to be 26 percent more than the Proposed Action route; given the alternatives analyzed in the Final EIS, this route would not be economically feasible. The route would shift the transmission line further way from the communities of Wittmann and Circle City, would be an alternative to the Sub-alternative route, and would alleviate impacts to the Thunder Ridge Airpark. However, the Wittmann/Circle City Bypass route would impact a number of residents southwest of Morristown and cause major impacts to the Roesner Ranch airstrip. The impacts would simply shift from one group to another, rendering this alternative substantially similar in effect to other alternatives considered or eliminated from detailed analysis, but costing more and outside of the ACC-certificated route. Therefore, the Wittmann/Circle City Bypass route was eliminated from detailed analysis.

2.7.13 Summary of Options and Route Screening Results

In assessing the results of application of the screening criteria to the technological options and other transmission line routes that were considered, only those characteristics that obviously distinguish a technological option or transmission line route from, or align it with other options or routes were discussed in the preceding descriptions. A summary of the screening results is provided in **Table 2.7-1**.

Table 2.7-1 Summary of Options and Route Screening Results for Eliminated Alternative

OPTIONS/ ROUTES	SCREENING CRITERIA			
	MEETS PURPOSE AND NEED AND/OR APS' OBJECTIVES	TECHNICALLY PRACTICAL AND FEASIBLE	ECONOMICALLY PRACTICAL AND FEASIBLE	ENVIRONMENTALLY REASONABLE AND/OR SIMILAR IN EFFECTS OR DESIGN
Cloud Road Route	Yes: Responds to the APS request for access across public land near the Sun Valley Substation and meets the purpose and need and APS' objectives for the Project and would be in conformance with the Bradshaw-Harquahala RMP.	Yes: Lands along the Cloud Road route are presently vacant and undeveloped. There are no known technical issues.	Yes: Overall cost estimate for along the Cloud Road route is approximately four percent less than that of the Proposed Action.	No: Route would essentially have the same effects as Alternative 3.
Hassayampa-Western SR 74 Route	Yes: Would be the same route as the Proposed Action for the requested ROW north of SR 74, would require an RMPA for plan conformance (utility corridor and VRM Class change), and would meet the purpose and need and APS' objectives for the Project.	Yes: Given constraints of possible construction in the river floodplain, the route is practical and feasible under current practice and technology.	Yes: Overall cost estimate for this route is approximately six percent more than that of the Proposed Action.	No: Unlike other alternatives and routes, this route would be sited within the Hassayampa River floodplain and would cut off and isolate small portions of one development in three different places.
Hassayampa-Joy Ranch Road Route	Yes: Would be the same route as the Proposed Action for the requested ROW north of SR 74, would require an RMPA for plan conformance (utility corridor and VRM Class change), and would meet the purpose and need and APS' objectives for the Project.	Yes: Given constraints of possible construction in the river floodplain, the route is practical and feasible under current practice and technology.	Yes: Overall cost estimate for this route is approximately two percent more than that of the Proposed Action.	No: Unlike other alternatives and routes, this route would be sited within the Hassayampa River floodplain and would cut off and isolate small portions of one development in three different places. The route would potentially impact operations at the Thunder Ridge Airpark.

Table 2.7-1 Summary of Options and Route Screening Results for Eliminated Alternative (Continued)

OPTIONS/ ROUTES	SCREENING CRITERIA			
	MEETS PURPOSE AND NEED AND/OR APS' OBJECTIVES	TECHNICALLY PRACTICAL AND FEASIBLE	ECONOMICALLY PRACTICAL AND FEASIBLE	ENVIRONMENTALLY REASONABLE AND/OR SIMILAR IN EFFECTS OR DESIGN
CAP Complete Route	No: Would not provide 230kV service to the northwest valley location, and thus would not meet APS' objectives for the Project.	Overhead Line – No: LAFB does not allow overhead transmission lines within the Clear Zone and APZs that would be crossed by the CAP Complete Route. Underground Line – Yes: For segment crossing LAFB, with close coordination with the Base.	Overhead Line – No: Would require acquisition of additional lands, rights-of-way, or easements to supplement federal lands containing the CAP; homes built in close proximity to the CAP would need to be acquired; numerous angle structures would be required; all these characteristics increase cost; the overall cost estimate for overhead lines under this route is approximately 43 percent more than that of the Proposed Action. Underground Line – No: APS estimates the cost of undergrounding a transmission line ranges from 10 to 30 times that of overhead lines.	Overhead Line – No: The Project would place high voltage transmission lines in close proximity to numerous existing residences, unlike the other alternatives and routes already under evaluation that are located in more undeveloped settings. Underground Line – See Underground a Portion or all of the Project, below.
LAFB Auxiliary Field #1 Bypass – Option A (along CAP)	No: Would not provide 230kV service to the northwest valley location, and thus would not meet APS' objectives for the Project.	Yes: An overhead transmission line is practical and feasible under past and current practice and technology, and much of the lands specific to this route are undeveloped and/or in the preliminary plat stage.	Yes: An overhead transmission line is economically practical and feasible under past and current practice and technology. ROW acquisition costs for this route would be more than double those for the Proposed Action, while construction costs would be less. The overall cost estimate for Option A would be approximately 24 percent more than that of the Proposed Action.	No: Between 235th Avenue and along US 60 the route would be near existing communities and at least 4 residences would need to be acquired. The Project would place a high voltage transmission line in close proximity to existing residences along the CAP, unlike the other alternatives and routes already under evaluation that are located in more undeveloped settings.

Table 2.7-1 Summary of Options and Route Screening Results for Eliminated Alternative (Continued)

OPTIONS/ ROUTES	SCREENING CRITERIA			
	MEETS PURPOSE AND NEED AND/OR APS' OBJECTIVES	TECHNICALLY PRACTICAL AND FEASIBLE	ECONOMICALLY PRACTICAL AND FEASIBLE	ENVIRONMENTALLY REASONABLE AND/OR SIMILAR IN EFFECTS OR DESIGN
LAFB Auxiliary Field #1 Bypass – Option B (along Carefree Highway)	No: Would not provide 230kV service to the northwest valley location, and thus would not meet APS' objectives for the Project.	Yes: Same as Option A.	Yes: An overhead transmission line is economically practical and feasible under past and current practice and technology. ROW acquisition costs for Option B would be more than double those for the Proposed Action, while construction costs would be less. Option B would cost 14 percent more than the Proposed Action.	No: Between 235th Avenue and along US 60 the route would be near existing communities and at least 4 residences would need to be acquired.
LAFB Auxiliary Field #1 Bypass – Option C (along Cloud Road)	No: Would not provide 230kV service to the northwest valley location, and thus would not meet APS' objectives for the Project.	Yes: Same as Option A.	Yes: An overhead transmission line is economically practical and feasible under past and current practice and technology. ROW acquisition costs for Option C would be more than double those for the Proposed Action, while construction costs would be less. Option C would cost 13 percent more than the Proposed Action.	No: Same as Option B.

Table 2.7-1 Summary of Options and Route Screening Results for Eliminated Alternative (Continued)

OPTIONS/ ROUTES	SCREENING CRITERIA			
	MEETS PURPOSE AND NEED AND/OR APS' OBJECTIVES	TECHNICALLY PRACTICAL AND FEASIBLE	ECONOMICALLY PRACTICAL AND FEASIBLE	ENVIRONMENTALLY REASONABLE AND/OR SIMILAR IN EFFECTS OR DESIGN
Vistancia Bypass Route – Option A (along Cloud Road)	No: Would not provide 230kV service to the northwest valley location, and thus would not meet APS' objectives for the Project.	Overhead Line - No: The route would require construction of the power line in the LAFB APZ 1 and Clear Zone, contrary to airfield operational restrictions. Underground Line – Yes: For segment crossing LAFB, with close coordination with the Base.	Overhead Line - No: An overhead transmission line is economically practical and feasible under past and current practice and technology. However, both ROW acquisition and construction costs under this route would be greater than the Proposed Action; construction costs would be nearly 40 percent more. The overall cost estimate for Option A would be approximately 39 percent more than that of the Proposed Action. Underground Line – No: Undergrounding of line would further increase the cost of this route.	No: Route would essentially have the same effects as those under Alternative 3.
Vistancia Bypass Route – Option B (along Carefree Highway)	No: Would not provide 230kV service to the northwest valley location, and thus would not meet APS' objectives for the Project.	Same as Option A	No: Same as Option A; the overall cost estimate for Option B would be approximately 35 percent more than that of the Proposed Action.	No: Route would essentially have the same effects as those under Alternative 3.

Table 2.7-1 Summary of Options and Route Screening Results for Eliminated Alternative (Continued)

OPTIONS/ ROUTES	SCREENING CRITERIA			
	MEETS PURPOSE AND NEED AND/OR APS' OBJECTIVES	TECHNICALLY PRACTICAL AND FEASIBLE	ECONOMICALLY PRACTICAL AND FEASIBLE	ENVIRONMENTALLY REASONABLE AND/OR SIMILAR IN EFFECTS OR DESIGN
Vistancia Bypass Route – Option C (along ACC-Certificated Route)	No: Would not provide 230kV service to the northwest valley location, and thus would not meet APS' objectives for the Project.	Same as Option A.	No: Same as Option A; the overall cost estimate for Option C would be approximately 34 percent more than that of the Proposed Action.	No: Route along 171st Avenue, between Cloud Road and SR 74, would essentially have the same effects and be the Proposed Action route and Alternative 2 routes. The certificated route portion of this route would be the same as the Proposed Action.
Westwing / Navajo Corridor Route	No: Would not provide 230kV service to the northwest valley location, and thus would not meet APS' objectives for the Project. Also, if constructed inside the existing corridor, de-rating would mean the Project no longer provides 500kV transmission capability.	Inside the Corridor – No: WECC would significantly de-rate the capacity of the line due to its proximity to the other existing lines within that common corridor, thus the Project would no longer provide 500kV transmission capability. Outside the Corridor – No: Multiple crossings would not be consistent with Good Utility Practice; the Project would be feasible, but not practical.	No: Construction costs under this route are estimated to be approximately 25 percent less than the Proposed Action; however, ROW acquisition costs are estimated to be nearly five times more due to extensive severance payments. The overall cost estimate for this route would be approximately 64 percent more than that of the Proposed Action.	No: Although this alternative would consolidate like uses within a common corridor, acquisition of existing residences would be required.

Table 2.7-1 Summary of Options and Route Screening Results for Eliminated Alternative (Continued)

OPTIONS/ ROUTES	SCREENING CRITERIA			
	MEETS PURPOSE AND NEED AND/OR APS' OBJECTIVES	TECHNICALLY PRACTICAL AND FEASIBLE	ECONOMICALLY PRACTICAL AND FEASIBLE	ENVIRONMENTALLY REASONABLE AND/OR SIMILAR IN EFFECTS OR DESIGN
Westwing/ Grand Avenue-Navajo 500/230kV Separation	No: The 230kV transmission line would be separated from the 500kV transmission line; the thus, not consistent with APS' objectives for the Project.	Westwing portion, inside the corridor – No: WECC would significantly de-rate the capacity of the line due to its proximity to the other existing lines within that common corridor, thus the Project would no longer provide 500kV transmission capability. Westwing portion, outside the corridor – No: Multiple crossings for the 500kV line would be required as described for the Westwing/Navajo Corridor Route, above. Multiple crossings would not be consistent with Good Utility Practice; the Project would be feasible but not practical. US 60 portion – Yes: There would be no known technical issues with this route for the 230kV transmission line.	No: Separation of the 230kV line from the 500kV line would involve Project costs for separate infrastructure and rights-of-way, resulting in a 66 percent increase in construction costs over the Proposed Action. Acquisition of ROWs in separate corridors and severance payments would increase the cost of ROW acquisition 133 percent above the Proposed Action. The overall cost estimate for this route would be 124 percent more than the Proposed Action.	No: Acquisition of approximately 20 existing homes and final platted parcels would be required in the vicinity of US 60. Additional impacts would also occur as two lines would need to be constructed.

Table 2.7-1 Summary of Options and Route Screening Results for Eliminated Alternative (Continued)

OPTIONS/ ROUTES	SCREENING CRITERIA			
	MEETS PURPOSE AND NEED AND/OR APS' OBJECTIVES	TECHNICALLY PRACTICAL AND FEASIBLE	ECONOMICALLY PRACTICAL AND FEASIBLE	ENVIRONMENTALLY REASONABLE AND/OR SIMILAR IN EFFECTS OR DESIGN
CAP Underwater Option	No: Would not provide 230kV service to the northwest valley location, and thus would not meet APS' objectives for the Project.	No: Underwater construction in a canal is not a proven technique and would impact canal maintenance.	Unknown: Cost estimates for underwater construction are not available. The cost of underwater construction, in addition to requirements for ongoing access and maintenance would be assumed to be substantially more than overhead construction.	No: Underwater canal construction is an unproven approach and may have impacts as yet unidentified. CAWCD has rejected this route.
CAP to Grand Avenue Route	Yes: Would provide 230kV service to the northwest valley location, and thus would meet APS' Project objectives, and would allow the BLM to respond to APS' application for access across public lands.	Portion within the - ACC-certificated route- Yes US 60 portion – Yes: There would be no known technical issues with this route for the transmission line. CAP portion – See descriptions above for the CAP Complete route and Underground options.	No: The overall cost estimate for this route using overhead transmission line would be 33 percent more than the Proposed Action. CAP portion - See descriptions above for the CAP Complete route and Underground options.	Yes: Known environmental advantages and disadvantages are indistinguishable from the Proposed Action route.

Table 2.7-1 Summary of Options and Route Screening Results for Eliminated Alternative (Continued)

OPTIONS/ ROUTES	SCREENING CRITERIA			
	MEETS PURPOSE AND NEED AND/OR APS' OBJECTIVES	TECHNICALLY PRACTICAL AND FEASIBLE	ECONOMICALLY PRACTICAL AND FEASIBLE	ENVIRONMENTALLY REASONABLE AND/OR SIMILAR IN EFFECTS OR DESIGN
Underground a Portion or All of the Project Option	Yes: The use of underground technology could be used to meet APS' Project objectives and allow the BLM to respond to APS' application for access across public lands.	HPFF, SCFF, XLPE - No: All three technologies are considered mature and reliable by industry experts, however APS does not believe that undergrounding a 500kV line for any distance is practical or meets the objectives of the company for reliability. Also, there are no known buried 500kV transmission lines, and none covering the distances proposed. CGTL - No: Feasible only for short distances, and thus may not be as practical as the other technology options.	All of the Project – No: APS estimates the cost of undergrounding a transmission line ranges from 10 to 30 times that of overhead lines; specialized skills and proprietary technology are required; thus rendering undergrounding of the entire Project impractical. Portions of the Project – Yes: While the cost increase of undergrounding the line even for a relatively short distance would be high, it may provide a practical option under certain circumstances.	All of the Project – No: Similar to pipeline construction, undergrounding transmission lines involves ground disturbance along the entire route, which would be greater than ground disturbance associated with overhead lines. Depending on the route, this may or may not be an issue. The disturbance footprint of facilities includes pressurization plants at either end, vaults every 800 to 1,600 feet, access roads to these facilities, and electric distribution lines to pressurization plants. The use of fluid-filled and compressed gas for underground technology creates environmental concerns about release of fluids or gasses into the environment. Portions of the Project – No: Environmental concerns associated with undergrounding the line would exist even for a relatively short distance.

Table 2.7-1 Summary of Options and Route Screening Results for Eliminated Alternative (Continued)

OPTIONS/ ROUTES	SCREENING CRITERIA			
	MEETS PURPOSE AND NEED AND/OR APS' OBJECTIVES	TECHNICALLY PRACTICAL AND FEASIBLE	ECONOMICALLY PRACTICAL AND FEASIBLE	ENVIRONMENTALLY REASONABLE AND/OR SIMILAR IN EFFECTS OR DESIGN
Wittmann/Circle City Bypass Route	Yes: Responds to the APS request for access across public land near the Sun Valley Substation and meets the purpose and need and APS' objectives for the Project and would be in conformance with the Bradshaw-Harquahala RMP.	Yes: Lands along the Wittmann/Circle City Bypass route are predominantly vacant and undeveloped. There are no known technical issues.	No: Construction costs under the Wittmann/Circle City Bypass route would be approximately 20 percent more than the Proposed Action route due to additional route length, proximity to the Hassayampa River, and crossing US 60. Land acquisition costs would be approximately 40 percent more than the Proposed Action route due to crossing additional private property. Overall costs would be approximately 26 percent more than the Proposed Action.	No: The unique portion of the route would eliminate impacts to Thunder Ridge Airpark, would avoid bisecting an area of State Trust land, and would be an alternative to the Sub-alternative route. However, • One structure would need to be acquired • Several structures including approximately seven residences would be within 1,000 feet of the centerline, likely on property that would adjoin the ROW. • There would be major impacts to the Roesner Ranch Airstrip, similar to impacts to Thunder Ridge Airpark under the Proposed Action. This alternative would simply shift the impacts from one group to another, rendering this alternative substantially similar in effect to other alternatives considered or eliminated from detailed analysis.

2.8 COMPARISON OF ALTERNATIVES

Table 2.8-1 compares and summarizes the Project components and environmental impacts of the Proposed Action and Action Alternatives.

This page intentionally left blank.

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Overall Project Disturbance							
Route Length (miles)		38.2	Same as P.A.	37.4	38.4	4.0	4.0
ROW (acres)		926	Same as P.A.	907	931	97	97
Temporary Access (miles)		10	Same as P.A.	8	9	0	<0.5
Permanent Access (miles along centerline)		40	Same as P.A.	39	40	4	4
Permanent Access (miles of spur roads)		1	Same as P.A.	2	2	0	0
Bradshaw-Harquahala RMP Amendments Required							
Utility Corridor		Yes – A 200-foot wide single-use utility corridor north and south of SR 74 corresponding to the requested ROW	Yes – A multiuse utility corridor on 2,362 acres north and 1,013 south of SR 74	Yes – A multiuse utility corridor on 1,013 acres south of SR 74	No	N/A	N/A
VRM Class Change		Yes – Change from VRM Class III to VRM Class IV on 2,362 acres north and 1,013 south of SR 74	Yes – Change from VRM Class III to VRM Class IV within the multiuse utility corridor north and south of SR 74	Yes – Change from VRM Class III to VRM Class IV within the multiuse utility corridor south of SR 74	No	N/A	N/A
Air Quality and Climate Change							
Maximum Pollutant Emissions from Construction (tons/month)	SO_2*	0.04	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.
	PM_{10}*	4.33	Same as P.A.	4.25	4.33	Same as P.A.	Same as P.A.
	$PM_{2.5}$*	1.08	Same as P.A.	1.07	1.08	Same as P.A.	Same as P.A.
	CO*	2.94	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.
	NOx*	7.94	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.
	VOC*	0.55	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.
GHG Emissions	Construction (total tons CO_2e)	823.9					
	Operation (tons/year)	16.4					
National Ambient Air Quality Standards (NAAQS) Compliance	SO_2*	No violations of NAAQS					
	PM_{10}* (Non-attainment area)						
	$PM_{2.5}$*						
	CO*						
	NOx*						
	O_3* (Non-attainment area)						

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Cultural Resources							
Number of National Register-eligible Sites Potentially Impacted	Historic	3	Same as P.A.	3	3	None	None
	Prehistoric	4		3	3		
	Multi-component	2		2	0		
Historic Properties within the Viewshed (Miles to line)	Santa Fe, Prescott & Phoenix Railway	0 *Negligible*	Same as P.A.	0 *Negligible*	0 *Negligible*	0 *Negligible*	0 *Negligible*
	Seymour III	4.3 *Negligible*		4.3 *Negligible*	4.3 *Negligible*	5.7 *Negligible*	4.3 *Negligible*
	Beardsley Canal	0 *Minor, Long-Term (LT)*		0 *Minor, LT*	0 *Minor, LT*	0 *Minor, LT*	0 *Minor, LT*
	Surly Site	3.2 *Negligible*	Same as P.A.	3.2 *Negligible*	3.1 *Negligible*	3.2 *Negligible*	3.2 *Negligible*
	Morristown Store	3.8 *Minor, LT*		3.8 *Minor, LT*	3.8 *Minor*	4.4 *Minor, LT*	3.8 *Minor, LT*
	Calderwood Butte Archaeological District	4.0 *Minor, LT*		4.0 *Minor, LT*	2.9 *Minor*	4.0 *Minor, LT*	4.0 *Minor, LT*
Geology and Minerals							
Number and type of active mining claims, mineral leases, and sand and gravel sites, and the number of metallic mineral districts leases in the disturbance footprint or ROW	Active Lode Mining Claims	3	12	None	None	None	None
	Metallic Mineral Districts	1	1	1			
	Active Sand and Gravel Sites	None	None	None			
	Active Oil and Gas, Sodium, and Geothermal Leases	None	None	None			
General		Construction could alter surface topography in areas of cut and fill; Access roads may increase accessibility to existing and future authorized mining claims, geothermal leases, and oil and gas leases *Negligible*					
Hazardous Materials and Wastes							
Potential for exposure of workers to hazardous materials, including hazardous wastes, during transportation and use of these materials		All materials and wastes would be handled and managed in compliance with state and federal regulations, and recycled or disposed of in existing, permitted offsite facilities. Waste management practices would ensure minimal impacts to workers from exposure to hazardous materials and wastes. *Minor, Short-Term (ST)*					
Potential for release of hazardous materials from potential leaks and spills causing contamination of surrounding soils and surface waters		There is potential for incidents involving releases of hazardous materials despite EPMs and BMPs being implemented and APS' adherence to the SWPPP during construction. Accidental spills that do occur outside of containment could contaminate the soil, and if surface runoff contacted these spills before they were cleaned up it would also become contaminated. *Minor, ST*					
Potential for generating or encountering soil contamination during construction		The likelihood that existing contamination would be encountered during construction is minimal. Contaminated soil exceeding regulatory limits for construction backfill would be transported to offsite, permitted disposal facilities. *Minor, ST*					

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Land Use and Range Resources							
Conflicts with Existing or Future Land Uses	State Trust Lands	24.7 acres crossed *Minor, LT*	Same as P.A.	25.8 acres crossed *Minor, LT*	26.6 acres crossed *Minor, LT*	Would leave 4.0 acres intact *Major, LT Beneficial*	Would bisect 4.0 acres *Minor, LT*
	Active Lode Mining Claims (miles)	1.5 *Moderate, LT*		1.0 *Moderate, LT*	None	N/A	N/A
	Commercial (miles)	0.4		0.8	0.6	0.0	0.0
	Light Industrial (miles)	0.5		0.5	0.0	0.0	0.0
	Recreation (miles)	7.2		3.1	3.4	0.0	0.0
	Recreation Development Potential (acres)	180		74	74	N/A	N/A
	Residential – Low Density (miles)	25.4		28.4	28.8	3.8	3.8
	Residential – Medium Density (miles)	2.1		2.1	2.7	0.0	0.0
	Residential Development Potential (acres)	660		732	756	N/A	N/A
	Overall Impacts	The portion of private and State Trust lands where the land use would be affected by the Proposed Action or any of the Action Alternative routes would be relatively small. *Minor, LT*					
Compliance with Land Management Plans and Zoning	Bradshaw-Harquahala RMP	Amendment Required (Single-use utility corridor and VRM class designation change)	Amendment Required (multiuse utility corridor and VRM class designation change)	Amendment Required (multiuse utility corridor and VRM class designation change)	In Compliance	N/A	N/A
	State	In Compliance	In Compliance	Amendment of ACC-certificated Route Required	Amendment of ACC-certificated Route Required	Amendment of ACC-certificated Route Required	In Compliance

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Compliance with Land Management Plans and Zoning Continued	Maricopa County Comprehensive Plan	• Would encourage appropriate buffers to mitigate conflicting land uses • Would create potential for conflicts between recreational use and the utility infrastructure • Would protect ridgelines, foothills, and other visually sensitive areas to the extent possible	Same as P.A.	• Would encourage appropriate buffers to mitigate conflicting land uses • Would reduce potential for conflicts between recreational use and the utility infrastructure • Conflicts between the transmission line and uses on private lands would arise • Impacts to open space on BLM-managed public lands would be minimal • Would protect ridgelines, foothills, and other visually sensitive areas to the extent possible	• Would eliminate potential for conflicts between recreational use and the utility infrastructure • Conflicts between the transmission line and uses on private lands would be greater under Alternative 3 than the Proposed Action or Alternatives 1 or 2 • Impacts to open space on BLM-managed public lands would be minimal	• Conflicts between the transmission line and uses on private lands would be greater under the Sub-alternative than the Proposed Action or Alternatives 1 or 2	Same as P.A.
	Maricopa County Regional Trail Plan or City of Peoria's Parks, Recreation, Open Space, and Trails (PROST) Plan	Would not conflict with the plans					
	City of Surprise General Plan	EIS process addresses the policies in the City of Surprise General and Town of Buckeye General Plans					
	City of Peoria General Plan	Would meet Policy 3.B.4 of the city's General Plan and also would be situated within a utility corridor defined on the city's General Land Use map	Same as P.A.	Would not meet Policy 3.B.4 of the city's General Plan	Would not meet Policy 3.B.4 of the city's General Plan	N/A	N/A
	Town of Buckeye General Plan	Would be within a BLM-designated utility corridor and would parallel other existing or approved transmission lines, thus keeping with compatible surrounding land uses					
Conflict with Authorized Uses	BLM Transportation Corridor	*Negligible*	Same as P.A.	*Negligible*	*Negligible*	N/A	N/A
	BLM Open Space (for recreational use)	Potential Conflict		Minimal Conflict			
Number of acres in each grazing allotment that would be affected	Acres Lost (ST)	129.6	Same as P.A.	119.2	121.9	9.2	9.2
	Acres Lost (LT)	123.9		121.1	118.5	10.7	10.7
	Overall Impacts	*Negligible* (all losses <1 percent of each allotment)					

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Public Health and Safety							
Projected noise levels above ambient at West Meyers St. near 235th Ave, 0.25 miles away (+dBA)	Ambient Noise Level = 45-60 dBA	+17-32 (helicopter; 77 dBA) +0-13 (heavy equipment; 55-58 dBA)					
Comparison of projected electromagnetic fields with ICNIRP recommendations (milliGauss or mG)	Recommended Exposure Limit = 2,000 mG	+8-20 mG *Minor, LT*					
Distance (miles) of Condition Class 2 fire regime crossed by the route	Condition Class 2 = Moderately altered from historic regime; risk of losing key ecosystem components	2.4	2.4	2.0	2.9	0.1	0.6
Paleontology							
Known Paleontological Resources		None known within 1 mile					
Proximity to formations with potential to contain paleontological resources		Potential for significant paleontological resources/ vertebrate fossils very low/unlikely; EPMs and BMPs would be implemented *Negligible – Minor, LT*					
Recreation and Special Designations							
Change in Recreation Access	Public Lands Along SR 74	Construction-related Delays *Major, ST*	Same as P.A.	Fewer Construction-related Delays *Minor, ST*	None	N/A	N/A
Change to ROS* setting	Roaded Natural	Construction Activities *Moderate, ST* Operations, Maintenance, Decommissioning Activities *Minor, LT*	Same as P.A.	Not Present	Not Present	N/A	N/A
	Rural	Construction Activities *Moderate, ST* Operations, Maintenance, Decommissioning Activities *Minor, LT*		Construction Activities *Negligible to Minor, ST* Operations, Maintenance, Decommissioning Activities *Minor, LT*			
Change to Castle Hot Springs SRMA	Access	Decrease in Access During Construction *Major, ST*	Same as P.A.	Decrease in access during construction in less heavily-used area *Minor, ST*	N/A	N/A	N/A
	Compliance with Management Goals	Operations, Maintenance, Decommissioning Activities *Major, LT (area closest to line)*	Same as P.A.	Operations, Maintenance, Decommissioning Activities *Major, LT (area closest to line)*	N/A		

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Change to Parks and Open Space	Lake Pleasant Regional Park	Visual and Noise Impacts During Construction *Negligible-minor, ST*	Same as P.A.	Same as P.A.	Less than P.A. *Negligible*	N/A	N/A
	Proposed Parks/Open Space Designation Area Lost	3 acres *Negligible*		3 acres *Negligible*	3 acres *Negligible*		
Other	Future Recreation Development/Parks Area Lost	20 acres *Negligible*	Same as P.A.	9 acres *Negligible*	10 acres *Negligible*	N/A	N/A
	Area Identified for Future Golf Course Development Lost	N/A		N/A	0.4 acres		
OHV* Recreation	Impacts to Routes North of SR 74	Temporary decrease in access during construction *Major, ST* Adverse impacts to the recreation experience of motorcycles intersecting the centerline access *Negligible to Minor, LT*	Same as P.A.	OHV recreation resources north of SR 74 would not be affected; impacts south of SR 74 would be similar in nature to those described for the Proposed Action *Negligible*	Not present	N/A	N/A
	Miles of Trail Used for Construction Access	1.4 miles Two-track *Moderate, ST*		0.3 miles Two-track *Negligible*			
Socioeconomics and Environmental Justice							
Effects Common to All Action Alternatives – Social Values	Employment	Overall Impact: *Minor, ST, Beneficial*					
	Construction-related Population and Housing	No effect on construction population-related housing in the Study Area expected					

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Socioeconomics - Market Value Effect	Construction Cost	$104 million	Same as P.A.	$101 million	$101 million	Approximately $350,000 more than the Proposed Action	Same as P.A.
	Economic Impacts of Construction	*Minor, ST, Beneficial*	Same as P.A.	*Minor, ST, Beneficial*	*Minor, ST, Beneficial*	*Minor, ST, Beneficial*	Same as P.A.
	Operations, Maintenance, and Decommissioning	*Negligible, LT*	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.
	Developed Property Values and Undeveloped Land Values	No residences within 200 feet of the ROW; therefore proximity and price effects do not apply; however, the value of developed properties adjoining the transmission line ROW may be affected. The value of approximately 101 acres of undeveloped land within 200 feet of the transmission line and outside the ROW within six planned developments could be reduced up to 34 percent	Same as P.A.	No residences within 200 feet of the ROW; therefore proximity and price effects do not apply; however, the value of developed properties adjoining transmission line ROW may be affected. The value of approximately 176 acres of undeveloped land within 200 feet of the transmission line and outside the ROW within six planned developments could be reduced up to 34 percent	No houses within 200 feet of the ROW; therefore proximity and price effects do not apply; however, the value of developed properties adjoining transmission line ROW may be affected. The value of approximately 229 acres of undeveloped land within 200 feet of the transmission line and outside the ROW within eight planned developments could be reduced up to 34 percent	Negatively affect four residences within 200 feet with a reduction in value that could range from 2.8 to 29 percent. A number of residences would be more than 200 feet from the transmission line, but located on property that appears that it would adjoin the ROW, and would have impacts to the property values. The value of 2.1 acres of private property planned for commercial development that is within 200 feet of the transmission line and outside the ROW could be reduced up to 34 percent.	Same as P.A.
	Property Taxes	Potential increase in tax revenue collected would be a 648 percent increase over existing property taxes but would only be approximately 0.40 percent of the Maricopa County property tax revenue. *Minor, LT, Beneficial*	Same as P.A.	Potential increase in tax revenue collected would be a 294 percent increase over existing property taxes but would only be approximately 0.40 percent of the Maricopa County property tax revenue. *Minor, LT, Beneficial*	Potential increase in tax revenue collected would be a 202 percent increase over existing property taxes but would only be approximately 0.40 percent of the Maricopa County property tax revenue. *Minor, LT, Beneficial*	A decrease in the assessed valuation of property located within 200 feet of the ROW could result in a decline in property tax revenue could decline if the property values, affecting the taxing entity and the beneficiaries of those tax revenues. *Negligible, Adverse*	Same as P.A.
	State Trust Land Value	554.6 acres of State Trust land valued at an estimated $16.6 million would be required	Same as P.A.	578.8 acres of State Trust land valued at an estimated to be $17.4 million would be required	615.2 acres of State Trust land valued at an estimated $18.4 million would be required	Same as P.A.	Same as P.A.

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Socioeconomics - Market Value Effect Continued	State Trust Land Revenue	Portions of seven allotments would be affected with permanent loss of four AUMs, with an annual loss of $110 in annual grazing revenue; however, this amount would be offset by the amount APS would pay in annual lease fees for State Trust lands crossed.	Same as P.A.	Portions of six allotments would be affected with permanent loss of three AUMs, with an annual loss of approximately $83 in annual grazing revenue; however, this amount would be offset by the amount APS would pay in annual lease fees for State Trust lands crossed.	Portions of six allotments would be affected with permanent loss of three AUMs, with an annual loss of approximately $83 in annual grazing revenue; however, this amount would be offset by the amount APS would pay in annual lease fees for State Trust lands crossed.	One grazing allotment would be affected with permanent loss of less than one AUM, with an annual loss of grazing revenue that would be insignificant; losses would be offset by the amount APS would pay in annual lease fees for State Trust lands crossed.	Same as P.A.
	Recreation	Decreased OHV trail access in the short term, and reduced recreational use due to changes in the recreation environment, resulting in economic effects of an unknown magnitude.	Same as P.A.	The quality of the recreation experience on BLM-managed public land and access to trails from the Boulders Staging Area would remain unchanged. Likewise, there would be no impact on recreation spending, so the economic impacts generated by that spending would also remain unchanged.	The SRMA containing areas heavily used for OHV recreation would not be crossed by the Alternative 3 route. Fewer BLM lands would be affected under Alternative 3, so there would be no impact to some types of motorized and non-motorized recreation use.	State Trust lands are not managed for recreation uses; therefore, the Sub-alternative would not result in any impacts to recreation.	Same as P.A.
Socioeconomics - Nonmarket Values	Recreation Values	No potential beneficial aspects; potential adverse aspects through changes in quality of the recreation experience.	Same as P.A.	Alternative 2 involves less BLM-managed public land and the land that is affected is less heavily used than that under the Proposed Action. Under this alternative, the quality of the routes could change, but the OHV use levels of the affected lands are much lower than the OHV area north of SR 74.	The transmission line would not cross any of the areas heavily used for recreation. The line would be so far removed from SR 74 that there would be little change in recreational access and few changes in recreational values under this alternative. Long-term adverse effects of an undetermined magnitude would occur to 54 acres planned for open space as a part of a private future development.	No Impacts	Same as P.A.

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Socioeconomics - Nonmarket Values Continued	Natural Amenities and Quality of Life	Construction would require the removal of some habitat for wildlife and special status species. Communities closest to the Project might feel that their current rural quality of life would be adversely affected with the presence of the transmission line and permanent loss of wildlife habitat. The changes in the natural amenities could permanently lessen the quality of life experience for some residents.	Same as P.A.	Similar in nature to the Proposed Action; however, there would be no Category II Sonoran desert tortoise habitat impacted under Alternative 2, only Category III habitat. Keeping this habitat safe could be viewed by some residents as a positive outcome.	Same as Alternative 2	Similar to those for the Proposed Action, but of a potentially higher intensity for property owners. A decline in property values could have an adverse effect on the quality of life for these property owners within 200 feet of the transmission line. *Minor to Moderate, LT*	Same as P.A.
	Health and Safety Concerns	While evidence is not sufficient to establish a definitive cause and effect relationship between EMF and human health effects, the potential health risks of exposure to EMFs remains a concern and affects interest in properties near transmission lines.	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.	Same as P.A.
Environmental Justice		Proportions of the route affecting private developed/occupied property within the EJ community versus outside the EJ community, and proximity of the ROW to private developed/occupied property do not indicate a disproportionate effect.					
Soils Resources							
Acres of Temporary Soil Disturbance (to be reclaimed)		230	Same as P.A.	224	229	Same as Proposed Action	
Acres of Permanent Soil Disturbance		108		104	108	Same as Proposed Action	
Acres of Prime Farmland		62		62	62	1 unit	1 unit
Erosion Potential Rating (majority of soils)		Low to Moderate		Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
Reclamation Suitability Rating (majority of soils)		Poor		Poor	Poor	Poor to Fair	Poor

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Transportation and Traffic							
Changes in Traffic Volume	Trips Generated on SR 74 and US 60	21,712 *Minor, ST*					
	Maximum Construction Vehicle Events at Intersections	20-32 *Moderate, ST*					
Miles of Access Road to be Constructed or Improved	Temporary (miles)	9.5 *Moderate, ST*	Same as P.A.	8.5 *Moderate, ST*	9.0 *Moderate, ST*	None	None
	Permanent (miles)	38	Same as P.A.	37	38	4	4
Number of Intersections at SR 74 or US 60 Requiring Upgrades		8 SR 74 and US 60	Same as P.A.	9 SR 74 and US 60	1 US 60 only	N/A	N/A
Project Elements Occurring in Standard Arrival/Departure Flight Paths		Line would be parallel to single landing strip at private air facility *Major, LT*					
Vegetation Resources							
Potential Disturbance in Each Vegetation Community	Creosote White Bursage Desert Scrub	Occurs West of US 60 *Minor, LT*					
	Sonoran Palo Verde Mixed Cacti Desert Scrub	Occurs East of US 60 *Minor, LT*					
	Riparian	Avoided *Negligible*					
Disturbance of Special Status Species	Salvage Restricted Area (SRA)-restricted Species	Individuals would be avoided if possible; many would be lost *Moderate, LT*					
	Sensitive Species	Hohokam agave individuals would be avoided *Negligible*					
Disturbance of Suitable Habitat for Special Status Species	SRA-restricted Species	Suitable habitat would be disturbed *Moderate, LT*					
	Sensitive Species	Suitable habitat for Hohokam agave (river terraces) may be disturbed, although disturbance of riparian habitats is unlikely *Moderate, LT (if individuals are present in suitable habitat is disturbed)*					
Proximity to Noxious or Invasive Weeds	General	Present within roadways, disturbed areas, and in ditches and drainages *Minor, ST*					
	Fire-prone species	Cheatgrass, red brome, and Bermuda grass are present in many areas *Moderate, LT*					

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Visual Resources							
Portion of the route common to all Action Alternatives on BLM-managed public land	Contrast	Weak to moderate					
	Meets VRM Class Objectives?	Yes, where applicable**					
	Overall Long-term Impact	Minor					
Portion of the route common to all Action Alternatives on all other lands	Contrast	Weak to moderate					
	Overall Long-term Impact	*Minor*					
Portion of route on BLM-managed public lands - Linear KOP	Contrast	None to Strong and Dominating	Same as P.A.	Moderate to Strong and Dominating	None to Moderate	N/A	N/A
	Meets current VRM Class Objectives?	Yes, in approximately 50 percent of VRM Class III north of SR 74 and 74 percent of VRM Class III south of SR 74 No, in approximately 50 percent of VRM Class III north of SR 74 and 26 percent of VRM Class III south of SR 74	Same as P.A.	Yes, in approximately 64 percent of VRM Class III south of SR 74 No, in approximately 36 percent of VRM Class III south of SR 74	N/A	N/A	N/A
	Would meet VRM Class Objectives with the Proposed RMPA?	Yes	Same as P.A.	Yes	N/A	N/A	N/A
	Overall Long-term Impact	*Major*	Same as P.A.	*Major*	*Minor*	N/A	N/A
Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ	Contrast	Minimal to Strong and Dominating	Same as P.A.	Negligible to Moderate	None to Moderate	N/A	N/A
	Meets VRM Class Objectives?	Yes, in approximately 50 percent of VRM Class III north of SR 74 and 74 percent of VRM Class III south of SR 74 No, in approximately 50 percent of VRM Class III north of SR 74 and 26 percent of VRM Class III south of SR 74		Yes, in approximately 64 percent of VRM Class III south of SR 74 No, in approximately 36 percent of VRM Class III south of SR 74	Yes, no portion of the transmission line would cross or dominate the views within the SRMA	N/A	N/A
	Would meet VRM Class Objectives with the Proposed RMPA?	Yes	Same as P.A.	Yes	N/A	N/A	N/A
	Overall Long-term Impact	*Minor to moderate*	Same as P.A.	*Negligible to moderate*	*Minor*	N/A	N/A

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Visual Resources Inventory	Impact to existing VRI	In the area where the transmission line would dominate the view, it would be a very discordant element; however, it would not affect the Scenic Quality rating assigned to the SQRU and therefore there would be no change to the current VRI.	Same as P.A.	In the area where the transmission line would dominate the view, it would be a very discordant element. The amount of acreage where the transmission line would dominate the view would be less than under the Proposed Action and would not affect the Scenic Quality rating assigned to the SQRU; therefore there would be no change to the current VRI.	N/A	N/A	N/A
Portion of Route on All Other Lands	Contrast	Weak to Moderate	Same as P.A.	None to Strong	See Portions of Route Unique to Alternative 3 (below)	Weak to Strong	Weak to Moderate
	Overall Long-term Impact	*Minor*	Same as P.A.	*Moderate*		*Moderate*	*Minor*
Portion of Route Unique to Alternative 3	Contrast	N/A	N/A	N/A	Weak	N/A	N/A
	Meets VRM Class Objectives?	N/A	N/A	N/A	N/A	N/A	N/A
	Overall Long-term Impact	N/A	N/A	N/A	Negligible	N/A	N/A
Lake Pleasant Regional Park	Contrast	Weak to moderate	Same as P.A.	Weak	Weak	N/A	N/A
	Meets VRM Class Objectives?	N/A	Same as P.A.	N/A	N/A	N/A	N/A
	Overall Long-term Impact	*Negligible to minor*	Same as P.A.	*Negligible to minor*	*Negligible to minor*	N/A	N/A
Impact to Portion of SR 74 within the Linear KOP	Overall Long-term Impact	*Moderate*	Same as P.A.	*Major*	*Minor to moderate*	N/A	N/A
Complies with Town of Buckeye and City of Peoria General Plans?		Yes	Same as P.A.	No – City of Peoria	No – City of Peoria	N/A	N/A
Water Resources							
Change in Volume, Timing, and/or Extent of Surface Water Flow		Small quantities and temporary alteration of existing uses of surface water for construction Limited size of construction corridor would not measurably increase local runoff levels *Negligible*					
Number of Drainages Crossed	By the Transmission Line	552	Same as P.A.	566	544	73	70
	By Access Roads	55		49	50	0	0
Acres of Waters of the U.S. Potentially Disturbed		4.51		5.91	5.86	0.66	0.39
100-year Floodplain Crossed (total feet)		7,360		7,615	9,150	0	0
Number of Structures Placed within the 100-year Floodplain		2-5		2-5	3-6	0	0
Measurable Effect on Groundwater Levels as a Result of Construction Water Uses		No New Groundwater Withdrawals *Negligible*					
Potential for Hydrocarbon Spills or Releases to Occur Over Shallow Groundwater		No Known Areas of Shallow Groundwater *Negligible*					

Table 2.8-1 Comparison Summary of Components and Impacts from Proposed Action and Action Alternatives (Continued)

(Footnotes at end of table.)

IMPACT INDICATOR		PROPOSED ACTION (P.A.)	ALTERNATIVE 1 PROPOSED ACTION WITH ADDITIONAL CORRIDOR	ALTERNATIVE 2 ROW SOUTH OF SR 74	ALTERNATIVE 3 CAREFREE HIGHWAY	SUB-ALTERNATIVE	
						STATE TRUST LAND ROUTE VARIATION	PRIMARY SEGMENT COMMON TO ALL ACTION ALTERNATIVES
Wildlife Resources							
Suitable Habitat Disturbance for Wildlife and Migratory Birds	Desert Scrub	Permanent removal of habitat *Minor, LT*					
	Riparian Habitat	Riparian habitats may be disturbed temporarily by noise *Minor, ST*	Same as P.A. *Minor, ST*	Same as P.A. *Minor, ST*	Not Present	Not Present	Same as P.A. *Minor, ST*
	Washes	Fragmentation would occur *Moderate, LT*					
	General – Migratory Birds	Transmission line would fragment habitats by posing a flight barrier and reducing habitat security *Moderate, LT*					
Suitable habitat disturbance for special status species	Willow Flycatcher	Habitat may be disturbed temporarily by noise *Minor, ST*	Same as P.A. *Minor, ST*	Same as P.A. *Minor, ST*	Not Present	Not Present	Not Present
	Desert Tortoise (Category II)	Some habitat would be removed *Moderate, LT*	Same as P.A. *Moderate, LT*	Not Present	Not Present	Not Present	Not Present
	Desert Tortoise (Category III)	Some habitat would be removed *Minor, LT*	Same as P.A. *Minor, LT*	Same as P.A. *Minor, LT*	Same as P.A. *Minor, LT*	Not Present	Not Present

*Definitions:
CO – Carbon Monoxide
NO_x – Nitrogen Oxide
0_3 - Ozone
OHV – Off Highway Vehicle
PM_{10} – Particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$ - Particulate matter equal to or less than 2.5 microns in diameter
ROS – Recreation Opportunity Spectrum
VOC – Volatile Organic Compound
**Compliance with VRM objectives only applicable to BLM-managed public lands.

This page intentionally left blank.

2.9 MONITORING AND MITIGATION

In addition to the Project design features, the EPMs, and BMPs proposed by APS, which are already included as part of the Proposed Action and any Action Alternative, additional monitoring and mitigation measures are necessary. These additional measures are in response to potential environmental impacts identified in Chapter 4 of this EIS. These measures are taken verbatim from the applicable resource sections in Chapter 4 and combined all together in this section as they would be included and apply to the Agency Preferred Alternative.

2.9.1 Air Quality

Control of Construction Related Fugitive Particulate Emissions

Maricopa County Air Pollution Control Rule 310 requires any earthmoving project that disturbs greater than 0.1 of an acre to obtain a dust control permit from the Maricopa County Air Quality Department (MCAQD) and to have a Dust Control Plan detailing dust control measures for the project and contingency measures. Additionally, for any site requiring a dust control permit, all water truck and water-pull drivers must have successfully completed the Maricopa County Basic Dust Control Training Class within the last three years.

For project sites greater than one-tenth of an acre, additional requirements apply as follows: For projects disturbing greater than one acre, the soil texture of the site must be identified, either by a soil assessment report or by Appendix F (Soil Designations) of Maricopa County Air Pollution Control Rules, and the site superintendant is required to have completed the Basic Dust Control Training Class within the last three years (County Rule 310 Sec. 309). For project sites of two acres or larger (or sites where 100 cubic yards/day of bulk material is hauled on/off), a trackout control device is required at all exits. For project sites of five acres or greater, an on-site Dust Control Coordinator is required and must have successfully completed the Maricopa County Comprehensive Dust Control Training Class within the last three years. Additionally, for sites 5 acres or larger, a project information sign must be posted in accordance with Rule 310 Section 308 requirements. The sign must include the MCAQD complaint number allowing the public to report dust related complaints.

Maricopa County Rule 310 limits fugitive dust visible emissions to no more than 20 percent opacity and requires extensive monitoring of earthmoving activities to ensure compliance with this limit and all applicable requirements. Additionally, Maricopa County Rule 310.01 specifies requirements for open areas and vacant lots. Such areas would possibly be a source of particulate emissions during both the construction phase and post-construction operational phase. Section 302.5 of the rule specifies that the owner of open land areas or vacant lots must not allow any particulate matter visible emissions beyond the property line and also requires implementation of control measures, such as establishment of vegetative ground cover, application of palliatives, or other control measures approved by the County to minimize windblown dust emission. The rule also requires periodic evaluation and measurements of soil stability and surface conditions to ensure the effectiveness of control measures.

A variety of fugitive dust control measures are available to minimize fugitive dust emissions which include:

- Frequent watering to maintain visible moisture and/or form soil crust (stabilization)
- Treatment of actively disturbed areas with dust palliatives
- Trackout control devices such as grizzly bars, wheel washers, gravel pads located at all entrances and exits
- Utilize street sweepers to remove any visible soil/mud/dirt carried onto paved access roads
- Limiting vehicle speeds on access roads to less than 15 mph
- Covering haul truck cargo beds with tarps and maintain 3 inches of freeboard
- Cessation of construction on high-wind event days, and/or during periods of adverse meteorological conditions which could cause or contribute to NAAQS violations
- Revegetation to stabilize soil
- Minimization of disturbed land areas to the extent practicable with project design considerations
- Maintain a visible crust and sufficient moisture on any storage piles
- During the post-construction operational phase apply dust suppression measures such as watering (to form crust), application of dust palliatives, or gravel on vacant lots and disturbed areas in accordance with Maricopa County Rule 310.01

Minimization of Emissions from Mobile Sources and Construction Equipment

Emissions from mobile and construction equipment are due primarily to combustion of diesel fuel in engines. Ultra-low sulfur diesel fuel, limited to 15 parts per million (ppm) sulfur is now in widespread use in Arizona and is virtually the only type of diesel fuel available for use in both on-road and non-road construction vehicles in the United States. Use of ultra-low sulfur diesel fuel drastically reduces SO_2 emissions and would serve to mitigate the associated secondary fine particulate emissions (of which SO_2 is a precursor), thereby lessening overall particulate impacts. Use of ultra-low sulfur diesel also results in lower NOx emissions. Additional mitigation measures for mobile sources and construction equipment include the following:

- Construction related trips of workers and equipment would be minimized
- Idling of heavy equipment would be minimized
- Manufacturer recommendations for engine maintenance and operation would be followed to optimize emission performance
- Newer equipment meeting the most stringent of applicable Federal or State standards would be utilized as much as practicable
- Diesel engines, motors and equipment would be located as far as practicable from residential areas and other sensitive areas (schools, daycare centers, and hospitals)

2.9.2 Cultural Resources

Avoidance/protection: APS would implement actions to ensure that historic properties that are avoided by Project design or redesign are not impacted during construction, operation, or maintenance activities. Such actions are subject to agency approval and may include, as appropriate, temporarily placing barriers or marking areas to be avoided during construction; construction monitoring by a professional archaeologist meeting the Secretary of the Interior standards (36 CFR Part 61) and qualification standards established by the Office of Personnel Management; and/or placing locked gates to restrict public access to transmission line access roads that may increase the potential for indirect impacts. BLM and ASLD would also work with APS to develop a long-term monitoring program for avoided properties at risk, involving regular monitoring and documentation by staff assisted by Arizona Site Steward Program volunteers.

Under the Proposed Action, Alternative 1, or Alternative 2, spanning the historic properties near the Agua Fria River would not be possible; therefore a supplemental Class III cultural resource survey was conducted (Rogge and Kirvan 2013), located within the ACC corridor, so that options for avoiding impacts by shifting the alignment to the east could be considered. The recently inventoried potential alignment shift (Rogge and Kirvan 2013) would avoid disturbance of all the National Register eligible sites between the river and the Morgan Substation. Four sites are present along the potential alignment shift, all eligible for the National Register. The alignment shift could span the one newly recorded small site (AZ T:3:358(ASM)), the Beardsley Canal (AZ T:3:55(ASM)), as well as the edges of two larger sites (AZ T:3:350(ASM) and AZ T:3:351(ASM)).

Mitigation through a data recovery program: Scientific data recovery may be implemented to mitigate impacts to historic properties that cannot be avoided. Procedures for scientific investigations, reporting, and long-term preservation of data and collections would be specified in a Historic Properties Treatment Plan implemented in accordance with the terms of a Section 106 Memorandum of Agreement (MOA) executed to address any identified adverse effect.

Mitigation of visual impacts: The impact analysis indicates negligible to minor impacts to the setting of historic properties within five miles of the Action Alternatives. Impacts could be reduced by selecting transmission line structures or facility designs and shades that would lessen visual contrast.

2.9.3 Geology and Minerals

Additional mitigation measures are not required.

2.9.4 Hazardous Materials and Hazardous and Solid Waste

If the Sub-alternative were selected as the preferred alternative, site-specific inquiries into the presence, if any, of pre-existing contamination from a Leaking Underground Storage Tank (LUST) site and a corral in the vicinity of the Sub-alternative alignment should be conducted in advance of locating structures for the power line.

2.9.5 Land Use and Range Resources

There is no mitigation proposed for land use and range resources.

2.9.6 Public Health and Safety

A number of mitigation actions related to public health and safety would be undertaken to reduce potential impacts from the Project during periods of construction and operations, maintenance, and decommissioning activities as described in the following sections. EPMs and BMPs established (**Appendix 2A**) would also be followed for the Project.

General

Following construction and after the line were to be placed into service, APS would respond to complaints of line-generated radio interference (RI) or television interference (TI) by investigating the complaints and implementing appropriate mitigation measures. The transmission line would be patrolled on a regular basis so that damaged insulators or other line materials that could cause interference are repaired or replaced.

As required by the ACC, through the conditions of a CEC, APS shall make every reasonable effort to identify and correct, on a case-specific basis, all complaints of interference with radio or television signals from operation of the transmission line and related facilities addressed in the CEC. APS shall maintain written records for a period of five years of all complaints of radio or television interference attributable to operation, together with the corrective action taken in response to each complaint. All complaints shall be recorded to include notations on the corrective action taken. Complaints not leading to a specific action or for which there was no resolution shall be noted and explained.

The transmission line configuration, hardware and conductor would limit the audible noise, RI, and TI due to corona. Tension would be maintained on all insulator assemblies to assure positive contact between insulators, thereby avoiding sparking. Caution would be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.

Noise

During construction, traditional large construction and ground moving equipment would be utilized, as outlined in **Table 2.4-3**, which would create noise during use. Typical hours of construction would be 5:00 am to 4:00 pm in the summer, and 6:00 am to 5:00 pm in the winter. Noise-generating construction activities, such as the use of heavy equipment or helicopters, within 0.5-mile of residential areas, would be restricted to the hours of 7:00 am and 7:00 pm; thus avoiding generation of noise during the periods (7:00 pm to 7:00 am) when the Community Noise Equivalent Level (CNEL) measurements include a sound penalty for time periods when a quiet environment is expected.

During operation and maintenance of the Project, similar equipment to that described for construction may be used, which would generate noise. Generally, maintenance activities would be confined to typical workday hours, thus avoiding generation of noise during the periods (7:00 pm to 7:00 am) when the CNEL measurements include a sound penalty for time periods when a quiet environment is expected. Occasionally there may be emergency

maintenance required, which may occur in the evening or nighttime hours, but that would take place very infrequently.

Fire

Contractor safety requirements provided in the appendix of the POD would typically be employed during construction. APS employees receive annual health and safety training, which includes fire prevention and response. These requirements, together with information described in the Health and Safety Plan would cover fire protection efforts associated with this Project. Employees would be prohibited from smoking outside of company vehicles during dry summer months.

Fiber optic/static neutral cables would be installed at the top of the structures supporting the transmission lines, to serve as static wires. These static wires (sometimes referred to as shield wires) are grounded and installed at the very top of the structures to protect lower conductors from lightning.

Vegetation management would be undertaken by APS in accordance with their TVMP (see **Appendix 2B**), as well as their IVM, which would include removal of all tall–growing vegetation within the wire zone, and preservation of low-growing herbaceous and woody plant communities that do not interfere with overhead transmission lines, or pose a fire hazard or hamper access.

APS would comply with industry standard codes governing the design and operation of high-voltage electric utility systems. Equipment would be designed such that if, for some reason, an energized phase conductor were to fall to the ground and create a line-ground fault, high-speed relay equipment would sense that condition and activate circuit breakers to quickly de-energize the line. This would reduce the risk of fire from the high voltage transmission lines to a low level.

2.9.7 Paleontology

Awareness during subsurface excavations in the Project Area is recommended, but monitoring should not be required. Any fossils so discovered should be professionally recovered without impeding development. Any fossils recovered during mitigation should be deposited in a permanent scientific institution (e.g., Arizona Museum of Natural History (AZMNH)) for the benefit of current and future generations.

2.9.8 Recreation and Special Designations

The following mitigation measures would apply to BLM-managed public lands only:

- The BLM would not approve the use of any single-track routes for construction access. The BLM would work with APS to develop a Construction Access Plan that would strictly limit construction access and operation of construction equipment to specific routes.
- The BLM would designate the permanent centerline access route as an Administrative Access Route only; prohibition of recreational use of the centerline access (except for single-track trails crossing of the centerline access) and speed limits would be enforced by BLM. Appropriate signs would be installed.

- The BLM would require that all four-wheel OHV roads/trails accessed from SR 74, intersecting the ROW (for example, at Christian Church Camp [Church] Road), be gated along the ROW with associated fencing to a natural barrier, to prevent unauthorized four-wheel OHV use along the centerline access.
- APS' ROW authorization would require monitoring the centerline access route for unauthorized recreational use. APS would monitor the condition of the centerline access and all gated ROW access points in conjunction with other Project monitoring, and provide reports of the conditions to BLM. During the course of routine field work in this area, BLM resource and law enforcement staff would monitor conditions within the ROW for unauthorized access and use. Should gates/fencing be breached or determined to be ineffective, APS would work with the BLM to undertake additional reasonable and practicable steps to prohibit access and mitigate for adverse impacts resulting from unauthorized access.
- APS would fund additional long-term monitoring of the ROW (three to five years) by the BLM or other cooperating entities for unauthorized recreation and associated impacts.
- APS would work with the BLM to collect necessary data (such as cultural resource surveys) to facilitate transportation planning, including future OHV recreation planning and management, on specific trails in the area north of SR 74.
- As a result, after mitigation there would be no residual effects to single-track OHV users.

2.9.9 Socioeconomics and Environmental Justice

There is no mitigation proposed for socioeconomic resources.

Several mitigations are proposed to address EJ concerns and eliminate potential residual effects. They include:

- At least one public meeting on the Draft EIS was held at a time and location easily accessible to the identified EJ community; the meeting was well publicized using media that are prominent in the EJ community.
- The transmission line route through the EJ community would use public (state or federal) land to the extent possible to minimize direct impacts to the community.

2.9.10 Soils

Soil Stabilization

In order to minimize the potential for erosion, temporarily disturbed surfaces would be restored at or as near to the original contour of the land surface as possible. Water diversions would be constructed along the ROW, as needed, to control surface water and minimize soil erosion. Temporary construction access roads, not required for future maintenance access, would be restored after construction of the Project is complete. Areas of soil compaction, including temporary access roads, would be scarified as needed. Seeding would be used where appropriate to reestablish soil stability. APS would be required to meet the

stabilization requirements and conditions of their Arizona Pollution Discharge Elimination System (AZPDES) permit.

Revegetation

Appropriate site-specific seed mixes for revegetation would be used where conditions vary. Salvaged native plants would be used for revegetation, if appropriate, along with seeding using BLM-recommended and approved seed mixes. Preferably, seed would be planted during months identified as most preferable for revegetation success following construction. Seed would be planted as directed by appropriate land managing agency.

Mitigation Practices

Mitigation practices that would be employed as a part of this Project to ensure that the soil resources are protected and/or impacts minimized include the following:

1. Vegetation would be cleared and the construction ROW would be graded only to the extent necessary. Vegetation within the ROW would be trampled or cut at or near the ground level. Except for the area to be excavated, the vegetative root system and subsurface soils would be left intact to the greatest extent practicable. This would help stabilize the soils within the ROW during construction. ROW boundaries would be clearly staked or flagged and no disturbance would be allowed beyond the limits.
2. Design access roads to fit the terrain by avoiding unstable slopes and highly erodible conditions, to the extent practicable, to protect soils and prevent excessive erosion and sedimentation. These protective measures include, but are not limited to, mulch, tracking, matting, or slope length shortening. When soils are wet, construction, operation, and maintenance activities would be restricted so as to properly support construction or maintenance equipment (i.e., when heavy equipment creates ruts in excess of four inches deep over a distance of 100 feet or more in wet or saturated soils). Where the soil is deemed too wet, one or more of the following measures would apply:
    - Re-route all construction or maintenance activities around the wet areas so long as the route does not cross into sensitive resource areas.
    - If wet areas cannot be avoided, implement BMPs for use in these areas during construction and improvement of access roads, and their subsequent reclamation. This includes use of wide-track or balloon-tire vehicles and equipment, or other weight dispersing systems approved by the appropriate resource agencies. It also may include use of geotextile cushions, pre-fabricated equipment pads, and other materials to minimize damage to the substrate where determined necessary by resource specialists. In addition and if feasible, APS could move construction activities into other portions of the Project until saturated areas dry out.

2.9.11 Transportation and Traffic

To minimize potential effects of the proximity of the transmission line to the Thunder Ridge Airpark, the transmission lines and structures adjacent to the single airstrip would be marked on a strictly voluntary basis, as the FAA does not have jurisdiction or regulatory authority over this facility.

2.9.12 Vegetation Resources, including Noxious and Invasive Weeds and Special Status Plants

Vegetation Communities

Areas of temporary disturbance, identified in **Table 2.4-4**, would be reclaimed according to BLM stipulations in the ROW grant and the final reclamation plan to meet the RMP reclamation goal to, "Maintain, restore or enhance the diversity, distribution, and viability of populations of native plants, and maintain, restore, or enhance overall ecosystem health." (BLM 2010a).

The following additional measures provide general guidelines as to what measures may be used to decrease vegetation resource impacts:

- In construction areas where recontouring is not required, vegetation would be left in place wherever possible, to avoid excessive root damage and allow for resprouting.
- In construction areas (e.g., structure sites, spur roads from existing access roads) where recontouring is required, surface restoration would occur in accordance with the land management agency permitting requirements. The method of restoration would typically consist of returning disturbed areas to their natural contour (to the extent practical), reseeding or revegetating with native plants (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches. Seed must be tested and certified to contain no noxious weeds in the mix by the State of Arizona Department of Agricultural (ADA). Seed viability also must be tested at a certified laboratory approved by the authorized officer.
- All construction and maintenance activities would be conducted in a manner that would minimize disturbance to vegetation. In addition, all existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line, as defined by the land management agency.
- Species protected by the Arizona Native Plant Law would be relocated and transplanted in accordance with the Law. A Vegetation Management Plan, approved by the BLM, would be included in the final POD. As dictated by the Arizona Native Plant Law, actions would include: 1) removal and stockpiling for replanting on site or 2) removal and transplanting out of surface disturbance areas. All personnel working on site would complete a mandatory Environmental Awareness Program, which includes pertinent information on the identification of Arizona Native Plant Law-protected plants.
- In designated areas, structures would be placed or rerouted so as to avoid sensitive features such as, but not limited to, riparian areas, or to allow conductors to clearly span the features, within limits of standard tower design.

Special Status BLM, USFWS Listed Species, and Arizona Native Plant Law

Pre-construction surveys would be performed in the ROW corridor and within all areas of potential new surface disturbance (i.e. access roads, laydown areas, etc.). Special status plants would be identified and marked. Designated surveys for Hohokam agave (*Agave murpheyi*) would be conducted in the layout/project planning phase and then again immediately prior (within a few days) to construction.

Special status plants would be protected to the extent that APS would conduct all activities in compliance with the Arizona Native Plant Law, which would include minimizing the destruction of native plants and in some cases relocating/transplanting individuals on or off-site. A Vegetation Management Plan would be prepared, included in the final POD, and approved by the BLM prior to initiating construction. APS would also work within the Arizona Native Plant Law in restoration and reseeding of construction-disturbed areas.

Invasive and Noxious Plants

BLM policy is to prevent the spread of invasive and noxious plants. Mitigation measures would be used at specific locations where resource sensitivity is high, such as where invasive and noxious weed infestations are existing within or near work areas. Several levels of prevention would be implemented such as minimizing disturbance to existing vegetation (leaving plants in place when possible) and reseeding disturbed areas with native plants and weed-free seed as certified by the ADA. All personnel working on site would complete a mandatory Environmental Awareness Program, which includes pertinent information on the identification of invasive and noxious plant species.

APS would treat any invasive species encountered during the course of herbicide vegetation maintenance projects within the ROW where it is reasonable, prudent, and effective. All appropriate regulations required by the landowner or land-management agency would be implemented and adhered to for any herbicide treatment activities.

2.9.13 Visual Resources

Micrositing

Within the linear KOP, the transmission line would be designed to minimize visual impacts from SR 74. Monopole structures would be used as they are less visually disturbing in foreground/middle ground situations (see **Section 4.14.4.2**). APS worked with the BLM to microsite a sampling of individual structures to understand how visual impacts from the portion of the Project located on BLM-managed public lands would be minimized. Structures were first proposed to be located within the ACC-certificated route as far north as possible from SR 74. Individual poles would be microsited, reducing visual contrast by taking greater advantage of the terrain – to provide either screening or backdropping of the transmission structures. Minor shifts would be made in the route alignment and potential structure locations within the proposed ROW. Along the approximately 6-mile segment north of SR 74 and within the proposed ROW, the alignment would be shifted from 2 to 195 feet (when comparing centerline to centerline). The structures would be shifted away from ridgelines and points of higher elevation to minimize the amount of the structures that would be visible from SR 74. In certain locations, the lower elevation would reduce sky-lining and would provide additional back-dropping or screening opportunities depending on the angle of view.

At locations where the transmission line would cross SR 74, individual structures either side of the highway would be shifted to maximize the distance between the structures and the highway. Simulations comparing previous pole locations with microsited locations would be used to determine effectiveness of micrositing efforts and make adjustments where possible. As a result, micrositing would result in a reduction in impacts to views of travelers on SR 74 and may reduce major impacts to some specific viewpoints within the linear KOP to less than major levels; however, it would not change the overall impact analysis or reduce the estimated area of visual dominance on BLM-administered public lands.

Structure Type

Simulations of the proposed transmission line were prepared using both monopoles and lattice structures as viewed from selected KOPs from SR 74 within the linear KOP where the transmission line would be located on BLM-managed public lands north of SR 74. Because of the relative proximity of the transmission line to SR 74, particularly where the transmission line would cross SR 74, it was determined that the lattice structures were more visually disruptive than the monopole structures. Therefore, to minimize visual impacts along the linear KOP, the BLM would require the use of monopoles on BLM-managed public lands.

The southern portion of the Castle Hot Springs Special Recreation Management Area (SRMA) and the Hieroglyphic Mountains Recreation Management Zone (RMZ) are most greatly impacted by the number of structures visible to the west of the linear KOP, where the landscape flattens out, distant views are common; and the landscape becomes less scenic and complex, and therefore has less capacity to absorb the transmission line (**Figures 4.14-6**, **4.14-21**, and **4.14-25**). In general, the remainder of the route beginning where the route diverges from SR 74 could be constructed using lattice structures south of the highway on private and State Trust lands. Because the viewers in the southern portion of the SRMA and RMZ would be superior to the transmission line, the transmission line would be against a backdrop of lands rather than skylined, and the views would be distant, the use of lattice structures would minimize visual impacts within the SRMA and RMZ, as well as any other distant views from the south, because the viewer would be looking through the lattice structure. However, monopoles would be used when the transmission line would be in the foreground/middle ground of sensitive viewers, such as existing residences and communities. Where the transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency.

Where the transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the underlying land manager and APS.

Color

The color of the structures or lattice towers affects how well the structure blends in the environment. Photographs of boards treated with the BLM's standard environmental colors were taken from KOPs representing typical topography and vegetation within the Project Area. The photographs were then analyzed to identify which standard environmental color

would minimize visual impacts. While no one color works best in all situations and lighting conditions, the shadow gray and shale green colors blended best under front lit conditions and had low levels of contrast in back lit situations. A complete analysis of the color selection process is available in the Project Record. Surface treatment options for monopole structures are very limited and do not achieve much color variation. The colors available would be shades of gray ranging to almost black; no surface treatments available would resemble shale green. Among the surface treatments available for the monopole structures, the BLM would require a treatment that would be non-reflective and most closely resemble shadow gray.

2.9.14 Water Resources

No additional mitigation required.

2.9.15 Wildlife Resources, including Special Status Wildlife and Migratory Birds

Pre-construction surveys would be implemented during the migratory bird nesting season to locate raptor and other migratory bird nests. Surveys would be conducted in the layout/Project planning phase so that sensitive areas (such areas with a high density of tortoises) can be identified and avoided if possible; and then again immediately prior (within a few days) to construction. The survey area would be determined by the timing of the survey (inside or outside the migratory season) and the buffer requirements. Survey areas for raptors would be determined by buffer requirements in Guidelines for Raptor Conservation in the Western United States (USFWS 2008a). If an active nest is found, a timing or spatial buffer would be implemented following BLM and USFWS guidelines. Each buffer would be implemented on a case-by-case basis, considering, for example, the duration of construction activities in the area and topographical barriers (if any) between the nest and construction activities. The decision maker regarding buffers would be the BLM Field Manager, with counsel from the BLM Wildlife Biologist.

All ground-clearing/disturbance activities that could affect special status species or habitat would be monitored. A qualified biologist would be retained to conduct pre-construction activities to minimize or prevent impacts to Sonoran desert tortoises and active migratory bird nests. Monitors would be present where active migratory bird nests were located during pre-construction surveys to assure buffer distances are maintained.

All personnel working on site would complete a mandatory Environmental Awareness Program, which includes pertinent information on biological resource identification of special status species or species of concern. APS's environmental contractor, approved by the BLM, would provide this training. All training would be conducted by experienced and qualified biologists approved by the BLM. The training, at a minimum, would cover identification of tortoises, how to move them according to AGFD guidelines, the protocols for waiting for clearances prior to construction, and when a monitor needs to be present. All personnel working on site would be briefed on the criminal penalties of take under the Migratory Bird Treaty Act, as well as the protocols for waiting for clearances prior to construction and the need to comply with timing stipulations and/or buffers around active migratory bird nests.

Holes or pits created by construction would be covered when not in use and would be checked for animals prior to use, in order to minimize trapping or burying of wildlife.

Raptor electrocutions would be minimized by constructing the transmission line according to raptor-safe design standards, which meet or exceed recommendations from the Avian Power Line Interaction Committee (APLIC 2006). Avian collisions with the power line would be minimized by following recommendations for bird diverters in APLIC (2012), at specific locations such as the Aqua Fria River crossing, and in coordination/consultation with appropriate agency specialists.

Gates would be installed on permanent ROW access roads, as required by the land owner or land managing agency, or if APS finds it to be warranted, to restrict unauthorized vehicular access to the ROW. This would prevent unnecessary traffic along access roads that would disrupt wildlife behavior or cause direct impacts (collisions) to wildlife.

Mitigation specific to Sonoran Desert Tortoise

BLM objectives regarding mitigation for desert tortoises on construction projects are to 1) avoid, minimize, or eliminate loss or degradation of habitat and 2) avoid or minimize take of tortoises. On BLM-managed public lands, the following mitigation measures would be implemented along with compensation, following the Final Report on Compensation for the Desert Tortoise (DTCT 1991), for any desert tortoises or desert tortoise habitat that is disturbed on BLM-managed public lands, as clarified in BLM Instructional Memorandum No. AZ-2012-031.

The first focus of the desert tortoise mitigation policy is on avoiding and minimizing impacts to tortoises and their habitat. If an action with on-site mitigation measures would result in residual impacts, then compensation would be required. Category II habitats would be compensated for at a rate ranging from 2:1 to 5:1. Category III habitats would be compensated for at a rate of 1:1. Acquiring habitat is the primary means of compensation for impacts to tortoise habitat; however, compensation funds can also be used for other tortoise conservation efforts. Purchasing private lands with tortoise habitat would bring these lands into federal protection, making the habitat more secure. Further, reclamation of temporarily disturbed areas would also be conducted and would assist with restoring impacted habitat.

Compensation for habitat loss or take on BLM-managed public lands would involve either the direct purchase of privately-owned desert tortoise habitat for transfer to conservation management, or the direct payment of funds to an appropriate land management agency/entity for purchase of tortoise habitat or other tortoise management actions (DTCT 1991). However, acquiring tortoise habitat is the primary means of compensating for residual impacts (BLM IM AZ-2012-031).

To minimize the potential for desert tortoise mortality, prior to and during ground-clearing construction activities in desert tortoise habitat on BLM-managed public lands, a desert tortoise monitor would survey the ROW. The monitor would meet qualifications for GS-0486 series Wildlife Biologist according to the U.S. Office of Personnel Management (opm.gov) and have the necessary experience and expertise required by the BLM. The survey area would include the ROW plus at least a 50-foot buffer either side of the ROW. Construction monitors would be present in areas where tortoises or fresh tortoise sign was observed during the pre-construction surveys. Any potential tortoise shelter sites in harm's

way would be cleared for tortoises and then rendered unusable (i.e., filled in or blocked with rocks or other native materials). If tortoises are encountered during the pre-construction phase or during construction, APS would follow BLM's Strategy for *Desert Tortoise Habitat Management on Public Lands in Arizona* and any appropriate guidance issued by AGFD and USFWS. Preconstruction and construction crews would look out for and avoid tortoises. If tortoises must be moved to avoid harming them, they would be moved according to AGFD, "Guidelines for Handling Sonoran Desert Tortoise" (2007).

As part of the Environmental Awareness Program, desert tortoise training would be provided to all construction personnel who would be present before and during the ground-clearing activities and any fencing of work areas within desert tortoise habitat. Training would cover identification of tortoises, how to move them according to AGFD guidelines, the protocols for waiting for clearances prior to construction, and when/if a monitor needs to be present. Desert tortoise training would also include general procedures on how to reduce tortoise mortality, such as checking stationary vehicles for tortoises, and recommendations on how to avoid disturbing tortoises that are detected. BLM would have in place any applicable and relevant enforcement procedures for these guidelines, similar to other construction projects on BLM land.

To minimize the potential for vehicle collisions with desert tortoises, vehicle speeds would not exceed 15 mph on all dirt access roads in desert tortoise habitat. Speed limit signs would be installed on all centerline access roads in desert tortoise habitat, and caution signs indicating the potential presence of Sonoran desert tortoises would be posted at the beginning of any such access road in desert tortoise habitat.

2.10 AGENCY PREFERRED ALTERNATIVE

The BLM has identified the Proposed Action route crossing public lands managed by the BLM as the Agency Preferred Alternative route for the proposed transmission line, including BMPs and mitigation measures, with modifications, as necessary. Modifications could consist of minor route deviations for micrositing of structures or segments of the line at the time of route engineering to minimize impacts to visual and other sensitive resources, as indicated in the mitigation measures; however, all potential modifications would still allow for the transmission line route to remain within the ACC-certificated route.

Under the Agency Preferred Alternative, the BLM would approve a 200-foot wide ROW within the existing designated utility corridor northeast of the Sun Valley Substation. In addition, the BLM would amend the Bradshaw-Harquahala RMP to:

- Designate a single-use 200-foot wide utility corridor on public lands managed by the BLM north of SR 74,
- Designate a multiuse utility corridor on 1,013 acres of public lands managed by the BLM south of SR 74 to address potential future BLM management considerations, and
- Change the existing VRM Class designations of 2,362 acres north of SR 74 and 1,013 acres south of SR 74 from VRM Class III to VRM Class IV to allow for the newly established utility corridors (**Figure 2.10-1**).

Upon amendment of the Bradshaw-Harquahala RMP, the BLM would approve a 200-foot wide ROW following the Proposed Action route within the newly designated corridors.

The Agency Preferred Alternative would reasonably accomplish the purpose and need for the federal action, while fulfilling the BLM's statutory mission and responsibilities, giving consideration to environmental, economic, and technical factors. This action is responsive to public input for avoiding environmental and economic impacts to lands in the Project vicinity.

TABLE OF CONTENTS

CHAPTER 3 AFFECTED ENVIRONMENT 3-1

3.1 Introduction 3-1
3.1.1 General Setting of Project Area 3-1
3.1.2 Resource Values and Uses Brought Forward for Analysis 3-1
3.1.3 Analysis Area 3-2
3.2 Air Quality and Climate Change 3-2
3.2.1 Laws, Ordinances, Regulations, and Standards 3-3
3.2.1.1 State and Local Air Quality Regulations 3-3
3.2.1.2 Federal Rules 3-5
3.2.2 Study Area 3-7
3.2.3 Study Area Overview 3-8
3.2.4 Existing Air and Climate Quality 3-8
3.2.4.1 National Ambient Air Quality Standards 3-8
3.2.4.2 Clean Air Act Attainment Status 3-11
3.2.5 Climate Change 3-12
3.2.5.1 Emission Sources 3-13
3.2.5.2 Global Effects 3-13
3.2.5.3 Regional Effects 3-14
3.2.5.4 Water Supplies 3-15
3.2.5.5 Wildfires 3-16
3.2.5.6 Species Migration and Extinction 3-16
3.2.5.7 Air Pollution 3-16
3.2.6 Visibility 3-17
3.2.7 Emissions Status 3-17
3.2.8 Existing Emissions Intensity of Grid Electricity 3-18
3.3 Cultural Resources 3-18
3.3.1 Laws, Ordinances, Regulations, and Standards 3-18
3.3.2 Region of Influence (Area of Potential Effect) 3-20
3.3.3 Cultural History 3-21
3.3.4 Inventory Methods 3-25
3.3.5 Known Cultural Resources 3-26
3.3.5.1 Proposed Action 3-26
3.3.5.2 Alternative 1 3-28
3.3.5.3 Alternative 2 3-29
3.3.5.4 Alternative 3 3-29
3.3.5.5 State Trust Land Route Variation Sub-alternative 3-30
3.3.5.6 Primary Segment Common to All Action Alternatives 3-30
3.3.6 Cultural Resources Sensitive to Indirect Visual Impacts 3-35
3.3.7 Native American Land Use and Cultural Affiliation 3-37
3.4 Geology and Minerals 3-38
3.4.1 Laws, Ordinances, Regulations, and Standards 3-38
3.4.2 Regional and Local Geology 3-39
3.4.3 Geological Hazards 3-41
3.4.3.1 Subsidence and Earth Fissures 3-41

3.4.4 Mineral Resources 3-43
3.5 Hazardous Materials and Hazardous and Solid Waste 3-45
3.5.1 Laws, Ordinances, Regulations, and Standards 3-46
3.5.2 Study Area Conditions 3-47
3.5.2.1 Hazardous Materials Sites 3-48
3.5.2.2 Hazardous Waste Disposal Sites 3-49
3.6 Land Use and Range Resources 3-50
3.6.1 Land Use and Range Resources 3-50
3.6.2 Laws, Ordinances, Regulations and Standards 3-50
3.6.2.1 Federal 3-51
3.6.3 Land Ownership, Planning, and Management 3-52
3.6.3.1 Federal Plans 3-52
3.6.3.2 State Plans 3-54
3.6.3.3 Local Plans 3-55
3.6.3.4 Future Planned Land Use 3-57
3.6.4 Existing Land Use 3-58
3.6.4.1 Residential 3-58
3.6.4.2 Commercial 3-59
3.6.4.3 Recreation 3-59
3.6.4.4 Industrial 3-59
3.6.4.5 Utilities 3-59
3.6.4.6 Mining 3-60
3.6.4.7 Rights-of-Way 3-61
3.6.4.8 Air Transportation Facilities 3-62
3.6.4.9 Zoning 3-62
3.6.5 Range Resources 3-63
3.7 Public Health and Safety 3-65
3.7.1 Noise 3-65
3.7.1.1 Laws, Ordinances, Regulations, and Standards 3-65
3.7.1.2 Fundamentals of Acoustics 3-67
3.7.1.3 Existing Noise Sources in the Study Area 3-69
3.7.1.4 Baseline/Ambient Noise Level 3-71
3.7.2 Electromagnetic Fields 3-72
3.7.2.1 Laws, Ordinances, Regulations, and Standards 3-73
3.7.2.2 Overview of Electromagnetic Fields 3-74
3.7.2.3 Electromagnetic Fields Health Overview 3-76
3.7.2.4 Health Effects of Electromagnetic Fields 3-77
3.7.2.5 Electromagnetic Fields in Context 3-80
3.7.2.6 Electromagnetic Fields and Transmission Lines 3-81
3.7.2.7 Electromagnetic Fields and the Project 3-82
3.7.2.8 Summary 3-83
3.7.3 Fire 3-83
3.7.3.1 Laws, Ordinances, Regulations, and Standards 3-84
3.7.3.2 Fire History and Data 3-84
3.7.3.3 Fuel Types 3-84
3.7.3.4 Fire Regimes 3-85

3.7.3.5 Fire Regime Condition Class ... 3-85
3.7.3.6 Fire Management ... 3-86
3.8 Paleontology ... 3-87
3.8.1 Laws, Ordinances, Regulations, and Standards ... 3-87
3.8.2 Study Area Conditions ... 3-88
3.8.3 Paleontological Potential ... 3-88
3.8.4 Known Paleontological Resources ... 3-90
3.9 Recreation and Special Designations ... 3-91
3.9.1 Laws, Ordinances, Regulations, and Standards ... 3-91
3.9.2 Recreation Overview ... 3-91
3.9.3 Recreation Management ... 3-92
3.9.3.1 Bureau of Land Management ... 3-92
3.9.3.2 Other Entities ... 3-93
3.9.4 Recreational Use ... 3-96
3.9.4.1 OHV Recreation ... 3-96
3.9.4.2 Target Shooting ... 3-99
3.10 Socioeconomics and Environmental Justice ... 3-99
3.10.1 Overview ... 3-99
3.10.2 Applicable Laws, Rules, and Standards ... 3-99
3.10.3 Socioeconomic and Environmental Justice Study Areas ... 3-99
3.10.3.1 Socioeconomics ... 3-99
3.10.3.2 Environmental Justice ... 3-100
3.10.4 Socioeconomic Conditions ... 3-100
3.10.4.1 Populations ... 3-100
3.10.4.2 Employment and Earnings ... 3-101
3.10.4.3 Housing Values ... 3-103
3.10.5 Fiscal Conditions ... 3-104
3.10.5.1 Property Taxes ... 3-105
3.10.5.2 State Trust Land ... 3-106
3.10.5.3 Utility Rates ... 3-106
3.10.6 Recreation Expenditures ... 3-107
3.10.7 Property and Land Values ... 3-108
3.10.7.1 Health and Safety Concerns and Impacts on Property Values ... 3-108
3.10.7.2 Visual Impacts ... 3-108
3.10.7.3 Proximity and Property Values ... 3-109
3.10.8 Nonmarket Values Associated with Health and Safety, Recreation Use, and Natural Amenities ... 3-109
3.10.8.1 Health and Safety Concerns ... 3-110
3.10.8.2 Recreation Use ... 3-110
3.10.8.3 Natural Amenities ... 3-111
3.10.9 Environmental Justice ... 3-112
3.10.9.1 Minority Populations within the HRUs and Nine Communities ... 3-112
3.10.9.2 Low-Income Populations within the HRUs and Nine Communities ... 3-113

3.10.9.3 Environmental Justice Baseline Analysis 3-115
3.11 Soils 3-118
3.11.1 Laws, Ordinances, Regulations, and Standards 3-118
3.11.2 Soil Types Present 3-119
3.11.3 Soil Hazards 3-123
3.11.3.1 Expansive (Shrink-Swell) Soils 3-123
3.11.3.2 Collapsible Soils 3-123
3.11.3.3 Hydrocompaction 3-124
3.11.3.4 Erosive Soils 3-124
3.11.4 Prime and Unique Farmlands 3-124
3.12 Transportation and Traffic 3-125
3.12.1 Laws, Ordinances, Regulations, and Standards 3-126
3.12.2 Study Area Conditions 3-126
3.12.2.1 Surface Transportation 3-126
3.12.2.2 Air Transportation 3-128
3.12.2.3 Rail Transportation 3-129
3.13 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants 3-129
3.13.1 Laws, Ordinances, Regulations, and Standards 3-129
3.13.2 Vegetation Communities 3-130
3.13.2.1 Creosotebush-White Bursage Desert Scrub 3-131
3.13.2.2 Sonoran Palo Verde-Mixed Cacti Desert Scrub 3-131
3.13.2.3 Sonora-Mojave Mixed Salt Desert Scrub 3-131
3.13.2.4 Barren Land and Open Water 3-132
3.13.2.5 North American Warm Desert Riparian 3-132
3.13.2.6 Apacherian-Chihuahuan Mesquite Upland Scrub 3-133
3.13.3 Special-Status Species 3-133
3.13.4 Invasive and Noxious Plant Species 3-135
3.14 Visual Resources 3-136
3.14.1 Laws, Ordinances, Rules, and Standards 3-136
3.14.2 Visual Resource Inventory 3-137
3.14.3 Visual Resource Management Objectives 3-138
3.14.4 Visual Resources Inventory and Management within the Study Area 3-139
3.14.5 Description of Visual Resources, Sensitive Viewers, and Key Observation Points 3-140
3.14.5.1 Selection of Key Observation Points 3-140
3.14.5.2 Format for Description of Visual Resources 3-140
3.14.5.3 Project Area Overview 3-140
3.14.5.4 Portion Common to All Action Alternatives 3-141
3.14.5.5 Portion Common to the Proposed Action, Alternatives 1, 2, and 3 3-143
3.14.5.6 Portion Common to the Proposed Action, Alternative 1, and Alternative 2 3-146
3.14.5.7 Proposed Action and Alternative 1 3-147
3.14.5.8 Alternative 2 3-153

3.14.5.9 Alternative 3 3-155
3.14.5.10 State Trust Land Route Variation Sub-alternative 3-158
3.15 Water Resources 3-160
3.15.1 Surface Water Resources 3-160
3.15.1.1 Laws, Ordinances, Regulations, and Standards 3-160
3.15.1.2 Climate 3-163
3.15.1.3 Surface Water Conditions 3-163
3.15.1.4 Surface Water Flow and Runoff 3-167
3.15.1.5 Surface Water Quality 3-168
3.15.1.6 Surface Water Use 3-168
3.15.2 Groundwater Resources 3-169
3.15.2.1 Laws, Ordinances, Regulations, and Standards 3-169
3.15.2.2 Groundwater Conditions 3-175
3.15.2.3 Groundwater Use 3-177
3.16 Wildlife Resources, Including Special-Status Wildlife and Migratory Birds 3-178
3.16.1 Laws, Ordinances, Regulations, and Standards 3-178
3.16.2 Field Reconnaissance 3-179
3.16.3 General Wildlife 3-180
3.16.4 Threatened, Endangered, and Special-status Species 3-183
3.16.4.1 Southwestern Willow Flycatcher 3-189
3.16.4.2 Sonoran Desert Tortoise 3-190
3.16.4.3 Bald Eagle 3-191
3.16.4.4 Golden Eagle 3-191
3.16.4.5 Other Special Status Species 3-192
3.16.5 Wildlife Linkages 3-193

LIST OF TABLES

Table 3.2-1 Meteorological Conditions Near the Project Area 3-7
Table 3.2-2 National Ambient Air Quality Standards 3-10
Table 3.2-3 Summary of Monitoring Network Data at Selected Sites 3-18
Table 3.3-1 Known Cultural Resource Sites along the Proposed Action and Action Alternative Routes, including the Sub-alternative 3-31
Table 3.3-2 Cultural Resources Potentially Sensitive to Visual Impacts 3-36
Table 3.4-1 Study Area Geologic Unit Symbol, Description, and Age 3-40
Table 3.6-1 Surface Management and Ownership within the Study Area 3-52
Table 3.6-2 Planned Residential Developments within the Study Area 3-57
Table 3.6-3 ROWs Crossed by the Proposed Action and Action Alternatives 3-61
Table 3.6-4 BLM and State Trust Land Grazing Allotments within the Study Area 3-64
Table 3.7-1 Sound Pressure Levels of Typical Noise Sources and Noise Environments 3-69
Table 3.7-2 Proximity of Project Alternatives and Anticipated Dominant Existing Ambient Noise Sources to Identified Residential Communities in Study Area 3-70

Table 3.7-3 Sample Long-term Measurements from Previous Ambient Sound Surveys 3-72
Table 3.7-4 IEEE Magnetic Field Exposure Levels for the General Public 3-73
Table 3.7-5 Summary of ICNIRP EMF Exposure Limits 3-74
Table 3.7-6 Example EMF Sources 3-81
Table 3.7-7 Comparison of APS Projected EMFs to ICNIRP Limits 3-82
Table 3.9-1 Visitation Statistics for The Boulders Staging Area 3-97
Table 3.9-2 Preliminary Route Designations within the Study Area 3-98
Table 3.10-1 Population and Population Growth 3-101
Table 3.10-2 Employment and Earnings by Industry Sector for 2001 and 2009 3-102
Table 3.10-3 Number Employed and Unemployment Rate 3-103
Table 3.10-4 Housing Values 2000 and 2005-2009 3-104
Table 3.10-5 Average Property Tax Rate Calculations (Percent) 3-105
Table 3.10-6 Private Land Characteristics 3-106
Table 3.10-7 Minority Representation by Race and Ethnicity – 2010 3-112
Table 3.10-8 Poverty and Household Income (2005-2009) 3-114
Table 3.10-9 Poverty Thresholds for 2009 by Size of Family and Number of Related Children Under 18 Years 3-115
Table 3.10-10 Minority and Low-Income Percentages in the Three-Mile Study Area 3-117
Table 3.11-1 Total Acreage of Each Soil Type Within 0.5-mile of All Action Alternative Routes 3-119
Table 3.11-2 Reclamation Suitability and Erosion Potential 3-121
Table 3.12-1 Regional Highways Annual Average Daily Traffic within the Study Area 3-127
Table 3.13-1 Vegetation Communities and Land Cover (in acres) 3-130
Table 3.13-2 Special Status Plant Species 3-133
Table 3.15-1 Waters of the U.S. within the Study Area 3-167
Table 3.15-2 Surface Water Points of Diversions and POUs within a 1-Mile Radius of the Proposed Action and Action Alternative Routes 3-170
Table 3.16-1 Special Status Wildlife Species 3-183
Table 3.16-2 AGFD Southwestern Willow Flycatcher Survey Results 3-190
Table 3.16-3 Acres of Desert Tortoise Habitat by Category within the Study Area 3-191

LIST OF APPENDICES

APPENDIX 3A Literature Review for Transmission Line and Housing Value Studies

CHAPTER 3 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter describes the existing environment, including the physical environment, natural environment, and human-made resources and uses, which would be affected by the Proposed Action and Action Alternatives.

All figures referenced in the text of this chapter are found in the Figures section of Volume II.

3.1.1 General Setting of Project Area

The Project Area is within the North American Deserts Ecoregion (Level I division) (Commission for Environmental Cooperation n.d.) and the Sonoran Basin and Range subdivision (Level III division) (EPA 2010a, 2011a). The subregion is distinguished by palo verde-cactus vegetation including saguaro, cholla, and agave cacti.

The Project Area is within the Basin and Range Physiographic Province. The climate of the province is characterized by being the driest in the United States. The topography is characterized by mountain ranges that are roughly parallel. The basins between the ranges are relatively flat plains with gentle slopes next to the mountains (Fenneman 1931). The Project Area is in the Sonoran Desert subdivision of the physiographic province. The subdivision is characterized by being approximately 20 percent mountains and 80 percent plains. The mountains vary from hills and buttes up to mountains rising 4,000 feet above sea level. The desert plains mostly lie below 2,000 feet elevation (Fenneman 1931).

The economy of the region has historically been based on irrigated agriculture, livestock grazing, and mining (Commission for Environmental Cooperation 1997). Today federal and ASLD land includes commercial, recreational, range, and undeveloped lands. Private land includes residential, commercial, industrial, and undeveloped areas. The primary types of land within the analysis areas and adjacent to the potential ROW are undeveloped lands at various stages of planning and preparation for low- to medium-density suburban residential and rural areas. Commercial areas are sparse within the Project Area, although some recreational lands include a commercial component. The industrial land is mainly used for manufacturing, landfill, and mining operations (URS 2012a). The Project location is shown in **Figure 1.1-1**.

3.1.2 Resource Values and Uses Brought Forward for Analysis

Based on internal (agency and cooperator) and external (public) scoping, or issue identification, a number of issues and concerns were identified for analysis in this EIS (see **Section 1.8**). In order to analyze and respond to the issues and concerns, the resource values and uses of the affected environment must be identified and described. For this EIS analysis, the following resources and uses are brought forward for analysis and are presented in this chapter.

- Air Quality and Climate Change, presented in **Section 3.2**
- Cultural Resources, presented in **Section 3.3**
- Geology and Minerals, presented in **Section 3.4**
- Hazardous Materials and Hazardous and Solid Waste, presented in **Section 3.5**
- Land Use and Range Resources, presented in **Section 3.6**
- Public Health and Safety, presented in **Section 3.7**
- Paleontology, presented in **Section 3.8**
- Recreation and Special Designations, presented in **Section 3.9**
- Socioeconomics and Environmental Justice, presented in **Section 3.10**
- Soils, presented in **Section 3.11**
- Transportation and Traffic, presented in **Section 3.12**
- Vegetation Resources, Including Noxious and Invasive Weeds and Special-status Plants; presented in **Section 3.13**
- Visual Resources, presented in **Section 3.14**
- Water Resources, presented in **Section 3.15**
- Wildlife Resources, Including Special-status Species, presented in **Section 3.16**

3.1.3 Analysis Area

The analysis area varies by resource value or use, depending on the geographic extent of the resource or use and the extent of the effects of the Proposed Action and Action Alternatives on a resource or use. In some cases the analysis area is the Project Area (e.g., paleontological resources), because that is the extent of the effects of the Project on the resource. In other cases the analysis area is much larger, encompassing larger administrative or natural boundaries (e.g., social and economic conditions, or wildlife and habitat), because the effects on the resource extend beyond the Project Area boundary. The analysis area is typically referred to as the Study Area.

3.2 AIR QUALITY AND CLIMATE CHANGE

The information provided in the following subsections is taken from a report titled *Environmental Resource Report for Air Quality and Climate Change Sun Valley to Morgan 500/230 kV Transmission Line Project* (URS 2012b). The contents of that report are used essentially verbatim below and without specific reference. Further, references made in that report are repeated herein without independent review.

3.2.1 Laws, Ordinances, Regulations, and Standards

3.2.1.1 State and Local Air Quality Regulations

In Arizona, the EPA has delegated authority to the Arizona Department of Environmental Quality (ADEQ) and three Arizona counties to regulate sources of air pollution in the state. Maricopa, Pima, and Pinal counties have authority over air pollution control programs for sources within their boundaries; ADEQ regulates certain source categories (specified in state statutes) within those three counties, and all sources throughout the rest of the state. The Project is located within Maricopa County. The following section summarizes the county rules that implement the Clean Air Act (CAA) of 1990 and may be applicable to the Project.

Maricopa County Air Pollution Control Rules

Maricopa County has adopted numerous air pollution control rules and regulations. The following paragraphs identify specific rules that would likely apply to one or more aspects of Project construction activities.

Rule 100 - General Provisions and Definitions: Discusses the legal authority for the Air Pollution Rules and Regulations and includes definitions of terms used in all Maricopa County Air Pollution Control Rules.

Rule 110 - Violations: Describes the classifications of violations that apply when the requirements of the rules are not met.

Rule 200 - Permit Requirements: Outlines the types of permits issued by the Air Pollution Control Division including Title V Permits, Non-Title V Permits, General Permits, Dust Control Permits, and Permits to Burn. The applicability of each permit is provided in Section 302 through Section 305 and Section 307 of this rule.

Transmission line projects are unlikely to trigger a requirement to obtain an operating permit, as equipment installed at these facilities is typically exempt. Prior to the commencement of construction, a Dust Control Permit would be required to comply with the requirements of Rule 310 discussed below. Equipment typically used by APS during construction such as concrete batch plants (CBP), crushing, screening, and wash plants (CSWPs) or portable (but not mobile) diesel engines (such as engines for electrical generators or water pumps) would be eligible for coverage under an ADEQ General Permit. The ADEQ CBP General Permit limits concrete production to 930 cubic yards per day for CBPs operating under generator power in non-attainment areas. If a CBP is co-located with a CSWP, the ADEQ permit for CSWP can include the associated concrete plant.

Rule 230 - General Permits: This type of permit is intended for facilities and equipment that represent a large number of sources that are similar in nature, have similar emissions, and are typically subject to the same requirements for operating, emissions control, monitoring, reporting, or recordkeeping.

Rule 280 - Fees: This rule outlines fees required for applications, permits, and emissions for owners and operators of sources of air pollution. An application fee and annual administrative fees are required for sources applying for coverage and operating under general permits. Fees for dust control permits are based upon the total surface area to be disturbed in acres. (See Section 310.1 of the rule.)

Rule 300 - Visible Emissions: This rule establishes limits for visible emissions and opacity from sources for which no source-specific opacity requirements apply. In general, air contaminants, other than uncombined water, may not be discharged from any single emission source in excess of 20 percent opacity. (Opacity is a condition under which air pollution obscures the view of an observer.) Equipment associated with transmission lines does not typically cause visible emissions.

Rule 310 - Fugitive Dust from Dust-Generating Operations: This rule limits emissions of particulate matter into the air from any property, operation, or activity that emits fugitive dust. Fugitive dust is commonly generated by vehicles and equipment used during earthmoving activities, by blasting operations, and by wind blowing in areas where natural vegetation has been removed or disturbed. The various sections of this rule establish standards for dust-generating operations, discuss dust control permits, opacity limits, stabilization requirements, available control measures, and signage requirements, describe the process for writing and submitting a dust control plan, and outline recordkeeping requirements.

Rule 310.01 - Fugitive Dust from Non-Traditional Sources of Fugitive Dust: The rule applies to open areas, vacant lots, unpaved parking lots, and unpaved roadways which are not included in the provisions of Rule 310. This rule and the control measures cited to reduce particulate matter emissions from these sources were developed in response to the county's PM_{10} non-attainment status.

Rule 311 - Particulate Matter from Process Industries: This rule limits particulate matter emissions by establishing emission rates based on process weight for operations not subject to a rule applicable to specific source categories. For the Project, this rule would apply to CBPs or CSWPs used near the construction site to supply the concrete needed for transmission tower foundations.

Rule 312 - Abrasive Blasting: This rule establishes limits for particulate matter generated during abrasive blasting operations that use solid substances such as sand, slag, steel, shot, garnet, walnut shells, or carbon dioxide pellets to mechanically erode surfaces.

Rule 315 - Spray Coat Operations: This rule addresses particulate matter emitted during spray coating and requires that coating equipment is operated inside enclosures that meet specific requirements. Spray booths or enclosures with forced air exhaust are required to have overspray filters with an average removal efficiency of 92 percent. If the booth or enclosure uses a water curtain or similar device, 92 percent of particulate matter must be removed. This rule would apply to any spray painting activities performed on or near the Project site.

Rule 316 - Nonmetallic Mineral Processing: This rule regulates emissions from activities related to commercial and/or industrial mineral or rock processing plants including excavating, crushing, grinding, screening, conveying, transferring, bagging, storing, loading, and dumping from vehicles. CBP's and CSWPs are examples of equipment that would be subject to this rule during construction of the Project.

Rule 320 - Odors and Gaseous Contaminants: This rule limits emissions of odorous and gaseous contaminants and defines high sulfur and low sulfur fuels and prohibits use of high sulfur fuels. Due to the fact that most fuels (that are used in generators/engines) meet the low

sulfur standard (set forth in federal regulations) it is unlikely that there would be a regulatory impact on the Project. The rule does specify a 0.03 parts per million by volume (ppmv) (30-min average) fence line hydrogen sulfide limit.

Rule 324 - Stationary Internal Combustion Engines: This rule sets fuel standards, good combustion practices, and carbon monoxide (CO), nitrogen oxide (NOx), volatile organic compounds (VOC), and particulate emission standards for existing and new stationary reciprocating internal combustion engines (both spark and compression ignition) greater than 250 brake horsepower (bhp) or a combination of engines greater than 50 bhp whose maximum aggregate brake horsepower is greater than 250 hp. This rule may apply to engines used for power generation on the Project.

Rule 335 - Architectural Coatings: This rule limits VOCs emitted during the use of architectural coatings which are applied to stationary structures, pavements, and curbs associated with construction of the Project. It provides limits on the pounds of VOC-containing material per gallon of coating for a variety of commonly used materials.

Rule 360 - New Source Performance Standards: This rule discusses design and performance criteria for specified new or modified emission sources. Although the rule does not include standards for transmission of electricity, there are parts that may be applicable to the construction phase. Refer to the New Source Performance Standards under the Federal Rules section below.

Rule 370 - Federal Hazardous Air Pollutant Program: This rule establishes emissions standards for federally listed hazardous air pollutants (HAPs). The rule incorporates by reference federal requirements applicable to HAPs included in 40 CFR Parts 61 and 63, including all appendices. The rules do not contain specific standards addressing the transmission of electricity. Subpart ZZZZ of 40 CFR Part 63, "National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines," may apply to an electrical generator utilized as a power source for a construction trailer, CBP, crushing and screening plant. Maricopa County considers the engine a stationary source subject to regulation if the duration of construction is greater than 12 months.

Rule 510 - Air Quality Standards: This rule establishes the maximum levels of air pollutants in ambient air necessary to protect human health and the environment. Both primary and secondary air quality standards are included. Pollutants addressed in the rule are: $PM_{2.5}$, PM_{10}, sulfur dioxide, ozone, CO, NOx, and lead. In addition to the NAAQS, emissions of these pollutants potentially caused by construction activities associated with this Project may not cause or contribute to an exceedance of these ambient standards.

3.2.1.2 Federal Rules

New Source Performance Standards

40 CFR Part 60 Subpart IIII - Performance Standards for Stationary Compression Ignition Internal Combustion Engines apply to diesel engines modified, constructed, or reconstructed after July 11, 2005, and diesel engines manufactured after April 1, 2006. Subpart IIII specifies extensive requirements for sulfur fuel content, cetane index requirements, performance testing and recordkeeping requirements, emission limits for NOx, CO,

hydrocarbons, and particulate matter. This would most likely apply to diesel engines used for power during construction activities.

Some engines may qualify for non-road engine status (under 40 CFR 1068.30). Engines that qualify for non-road engine status, however, must comply with the non-road engine requirements of 40 CFR 89.112, and 40 CFR parts 90, 1039, 1048 or 1054.

40 CFR Part 60 Subpart JJJJ - Performance Standards for Spark Ignition Internal Combustion Engines (SI ICE): This standard sets limits on NOx, CO, VOC, and specifies a sulfur limit for gasoline fuel. This regulation applies to all new, modified, and reconstructed SI ICE (e.g., gasoline engines) which commenced construction (usually the date the engine was ordered by the owner/operator) after June 12, 2006, and manufactured after dates specified in the rule (depending on engine size/type), the earliest of which is July 1, 2007.

EPA's Greenhouse Gas Mandatory Reporting Rule

The EPA issued a mandatory reporting rule for large sources and suppliers of GHGs in 2009. Subpart D of the rule addresses requirements for electric generating facilities. The applicability of Subpart D is limited to sources in this category subject to 40 CFR Part 75, "Continuous Emission Monitoring." Transmission lines would not include equipment subject to this rule. Certain electric generating units are covered under Subpart C, "General Stationary Fuel Combustion." However, the reporting threshold for this category is a combined 25,000 metric tons of carbon dioxide equivalent (CO_2e) emissions or more per year which equates to an estimated 30 million British thermal units (MMBtu) per hour of heat input capacity. The Project would not include combustion equipment that would trigger the reporting threshold. Emergency equipment and emergency generators are excluded from a facility's aggregate heat input rating under Subpart C.

EPA's Prevention of Significant Deterioration Tailoring Rule

The *Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule* was finalized by EPA on May 13, 2010. The rule is being implemented in phases, the first of which began in January 2011 and applied to sources that were already regulated under the Prevention of Significant Deterioration (PSD) and Title V permitting programs because they emit other criteria pollutants in quantities greater than the permitting thresholds established under those rules. These sources became subject to the rule only if they increased GHG emissions by 75,000 tons per year (tpy) CO_2e.

In July 2011, the second phase of implementation began. The second phase applies to newly constructed facilities that emit more than 100,000 tpy CO_2e and modifications to existing facilities that increase GHG emissions by 75,000 tpy CO_2e. Although an effective date has not been established for Phase 3, the rule states that EPA does not intend to require permitting for sources that emit less than 50,000 tpy CO_2e and that this phase will not occur prior to April 30, 2016 (EPA 2010b).

Maricopa County's Greenhouse Gas Regulations

The MCAQD applies the EPA's PSD Tailoring Rule to sources that trigger applicability under the rule. As outlined above, the Project would not be regulated under the current rule. There are no additional climate change laws, ordinances, regulations or standards in Maricopa County.

3.2.2 Study Area

The Study Area is located within the northwest portion of Maricopa County. The Study Area is primarily located within a valley which is roughly bounded by the Hieroglyphic Mountains to the north, the White Tank Mountains to the south, and the Agua Fria and Hassayampa Rivers to the east and west, respectively. The elevation of the Study Area ranges from approximately 1,700 to 2,000 feet above mean sea level (amsl) along the western and northern areas to 1,400 feet amsl along the eastern boundary.

The eastern termination point of the Project at Morgan Substation is approximately 30 miles northwest of Phoenix. The elevation in this area is 1,580 feet above sea level (asl). The elevation at the western termination point of the Project in the Town of Buckeye is approximately 1,560 feet asl.

During the winter months, weather systems bringing precipitation to the Phoenix area typically originate from the Pacific Ocean. During the summer wet season, known as "monsoon season," storms generally enter Arizona from the southeast and often originate in the Gulf of Mexico. Monsoon storms occur when this moisture is lifted in the atmosphere forming thunderstorms. **Table 3.2-1** contains average precipitation and temperature data for two meteorological stations near the Project Area.

Table 3.2-1 Meteorological Conditions Near the Project Area

AVERAGE HISTORICAL MONTHLY TEMPERATURES (˚F) AND AVERAGE PRECIPITATION (INCHES)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Wittmann, AZ 029464 (12/1/1923 to 12/31/2010)												
Average Max Temp	63.6	66.9	73.4	82.3	91.8	100.6	105.4	102.6	97.6	86.5	74.0	65.0
Average Min Temp	36.6	39.7	43.2	50.0	58.6	67.1	76.8	75.5	68.7	56.3	44.6	38.3
Average Precipitation	0.95	1.15	0.73	0.51	0.13	0.05	0.93	1.40	0.97	0.48	0.57	1.21
Youngtown, AZ 020660 (10/1/1964 to 12/31/10)												
Average Max Temp	67.3	71.5	77.2	85.3	94.6	103.4	106.2	104.5	99.5	88.6	75.6	66.4
Average Min Temp	40.3	43.5	47.6	53.2	62.3	70.7	78.6	77.3	70.4	58.1	46.5	39.7
Average Precipitation	1.02	1.19	1.09	0.32	0.12	0.06	0.81	1.11	0.82	0.64	0.65	1.12

Source: Western Regional Climate Center 2011a.

Precipitation totals are lowest on average in the months of May and June with annual rainfall totals averaging approximately nine inches.

3.2.3 Study Area Overview

The Study Area is located within the northwest portion of Maricopa County. The Study Area is primarily located within a valley which is roughly bounded by the Hieroglyphic Mountains to the north, the White Tank Mountains to the south, and the Agua Fria and Hassayampa Rivers to the east and west, respectively. The elevation of the Study Area ranges from approximately 1,700 to 2,000 feet amsl along the western and northern areas to 1,400 feet amsl along the eastern boundary.

The eastern termination point of the Project at Morgan Substation is approximately 30 miles northwest of Phoenix. The elevation in this area is 1,580 feet asl. The elevation at the western termination point of the Project in the Town of Buckeye is approximately 1,560 feet asl.

During the winter months, weather systems bringing precipitation to the Phoenix area typically originate from the Pacific Ocean. During the summer wet season, known as "monsoon season," storms generally enter Arizona from the southeast and often originate in the Gulf of Mexico. Monsoon storms occur when this moisture is lifted in the atmosphere forming thunderstorms. **Table 3.2-1** contains average precipitation and temperature data for two meteorological stations near the Project Area.

3.2.4 Existing Air and Climate Quality

Air quality is characterized by the concentration of specified pollutants in the atmosphere in ppm or micrograms per cubic meter ($\mu g/m^3$). The significance of the concentration of each pollutant is determined through comparison with applicable air quality standards. For the Project, predicted emissions will be compared to NAAQS, as identified in the federal CAA and regulated by the EPA (see **Table 3.2-2**).

The process for establishing NAAQS is exhaustive and thorough. Federal regulations require the NAAQS be evaluated periodically to ensure they remain health protective. Each of these evaluations represents an extensive process including a detailed examination of available health data and assessing whether the existing ambient pollutant concentration standard is adequately health-protective. In addition, an independent committee of non-EPA experts conducts peer review of the EPA's work and provides the EPA Administrator with advice and recommendations regarding the scientific adequacy of EPA's evaluation.

3.2.4.1 National Ambient Air Quality Standards

Since 1970, the federal CAA and subsequent amendments have provided the authority and framework for EPA regulation of air emission sources. The EPA regulations promulgated pursuant to the authority provided in the CAA serve to establish requirements for the monitoring, control, and documentation of activities that will affect ambient concentrations of certain pollutants that may endanger public health or welfare. In particular, these regulations have the overall objective of achieving and maintaining adherence to appropriate standards for ambient air quality.

As an enforcement tool, the CAA establishes the NAAQS, which currently apply to the following criteria pollutants. They include:

- sulfur dioxide (SO_2),
- carbon monoxide (CO),
- nitrogen dioxide (NO_2)
- particulate matter equal to or less than 10 microns in diameter (PM_{10}),
- particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$),
- ozone (O_3), and
- lead (Pb).

The CAA established two types of NAAQS: primary standards to protect public health, including the health of sensitive populations such as individuals with respiratory conditions, children, and the elderly; and secondary standards to set limits that protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. These standards are defined in terms of threshold concentration (e.g., ppm and $\mu g/m^3$) measured as an average for specified periods of time (averaging times). Short-term standards (i.e., 1-hour, 8-hour, or 24-hour averaging times) were established for pollutants with acute health effects, while long-term standards (i.e., annual averaging times) were established for pollutants with chronic health effects. The NAAQS are listed in **Table 3.2-2** (EPA 2011b).

Table 3.2-2 National Ambient Air Quality Standards

POLLUTANT	PRIMARY STANDARD		SECONDARY STANDARD	
	LEVEL	AVERAGING TIME	LEVEL	AVERAGING TIME
SO_2	75 ppb	1-hour[1]	0.5 ppm	3-hour[2]
	0.14 ppm	24-hour		
	0.03 ppm	Annual		
PM_{10}	150 µg/m^3	24-hour[3]	Same as Primary	
$PM_{2.5}$	35 µg/m^3	24-hour[4]	Same as Primary	
	15 µg/m^3	Annual[5]	Same as Primary	
CO	35 ppm	1-hour[2]	—	
	9 ppm	8-hour[2]	—	
NO_2	0.053 ppm	Annual	Same as Primary	
	0.100 ppm	1-hour[6]	Same as Primary	
Pb	0.15 µg/m^3	Rolling 3 month Average[7]	Same as Primary	
O_3	0.12 ppm	1-hour[8]	Same as Primary	
	0.08 ppm (1997 std)	8-hour[9]	Same as Primary	
	0.075 ppm (2008 std)	8-hour[10]	Same as Primary	

Source: EPA 2011b

Notes: µg/m^3 = micrograms per cubic meter; ppm = parts per million

[1]Final rule signed June 2, 2010. The 1971 annual and 24-hour SO2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated non-attainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

[2]Not to be exceeded more than once per year.

[3]Not to be exceeded more than once per year on average over 3 years.

[4]To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.

[5]To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective December 17, 2006).

[6]To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).

[7]Final rule signed October 15, 2008.

[8](a) EPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").

(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is $\leq$ 1.

[9](a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

(c) EPA is in the process of reconsidering these standards (set in March 2008).

[10]To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).

3.2.4.2 Clean Air Act Attainment Status

The EPA assigns classifications to geographic areas based upon monitored air quality conditions. An area is classified for each of the criteria pollutants as one of three categories:

- Attainment - an area that meets that national primary and secondary ambient air quality standard for the pollutant,
- Non-attainment - an area that does not meet (or contributes to ambient air quality in an area that does not meet) that national and secondary standard for the pollutant, or
- Unclassified - an area that cannot be classified on the basis of available information as meeting or not meeting the national primary and secondary ambient air quality standard for the pollutant; with respect to air quality permitting requirements, unclassified areas are treated as attainment areas.

Sufficient monitoring data must be available for the EPA to designate an area as attainment or non-attainment. Areas in which air pollutant concentrations exceed the NAAQS are designated as non-attainment for specific pollutants and averaging times. Typically, non-attainment areas are urban regions and/or areas with higher-density industrial development. Since an area's attainment status is designated separately for each criteria pollutant, one geographic area may have all three classifications. **Figure 3.2-1** is a map of Arizona showing county boundaries and areas throughout the state that have been classified as non-attainment or attainment with a maintenance plan.

- As shown in **Figure 3.2-1**, areas of Maricopa County have been designated as non-attainment for PM_{10} and ozone. There is also a carbon monoxide attainment area with a maintenance plan.
- Particulate Matter is made up of solid and liquid particles of various sizes found in the air. These particles can include acids, organic chemicals, metals, and soil or dust. The size of the particle is important in determining the potential for health problems in the human body. The smaller particles, less than 10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$, respectively), can enter the lungs and potentially cause serious health effects, especially in sensitive populations.

Carbon monoxide is the most commonly occurring air pollutant, but does not remain in the atmosphere for long periods because it is easily converted into carbon dioxide (CO_2). The largest source of CO in urban areas is tailpipe emissions from motor vehicles, but it is also produced during other types of fuel combustion. In outdoor areas where high concentrations of CO exist, people with heart disease can experience chest pains and healthy people experience increased fatigue.

Ground-level ozone is not emitted directly from air pollutant sources, but is formed through a chemical reaction of VOCs, NO_x, and other toxic pollutants in the presence of heat and sunlight. Common sources of VOCs and NO_x include motor vehicle exhaust and emissions from combustion equipment at industrial facilities. VOCs are present in chemical solvents and consumer products. Exposure to unhealthy levels of ozone at ground level can affect the respiratory system, causing symptoms such as coughing, throat irritation, chest tightness, and shortness of breath.

The PM_{10} classification in Maricopa County is categorized as serious non-attainment. Although the MAG has implemented numerous control measures to reduce the levels of PM_{10} in the air, the county has been unable to comply with the 24-hour standard. The county submitted a revision to the State Implementation Plan (SIP) to the EPA in 2007 to comply with the requirements in Section 189(d) of the CAA which requires annual reduction of PM_{10} or PM_{10} precursors by five percent of the most recent emission inventory. Particulate matter sources of concern include construction activities, paved road dust, unpaved roads and parking lots, agricultural activities, windblown dust from disturbed vacant lots, construction sites, and agricultural fields, fires and open burning, dust from off-road recreational vehicles, leaf blowers, and exhaust from cars. **Figure 3.2-2** shows the PM_{10} non-attainment area for Maricopa County. The Proposed Action route and all other Action Alternatives, from the eastern termination point at Morgan Substation, to the area south of Dove Valley Road and west of the 259th Avenue alignment is within the PM_{10} non-attainment area. The western portion of the route, similar to the Proposed Action and all Action Alternatives, is outside of the PM_{10} non-attainment area.

The CO attainment status was revised to attainment with a maintenance plan in April of 2005. This means that the county demonstrated to the EPA through monitoring data and control measures included in a maintenance plan that the CO standard would be met in future years. According to the SIP section of Maricopa County's website, there has not been an exceedance of the CO standard in the county since 1996. Carbon monoxide is emitted during the combustion fuel used in vehicles and industrial equipment, as well as during wildfires.

Maricopa County is designated as non-attainment for ozone. In February 2008, the EPA lowered the ozone NAAQS from 0.08 ppm to 0.075 ppm. In March of 2009, the state submitted 8-hour ozone standard recommendations to EPA for areas of the state, exclusive of Indian Country. **Figure 3.2-3** depicts the recommended 8-hour ozone non-attainment area boundary which encompasses a significant portion of Maricopa County (State of Arizona 2009). The Proposed Action route and all other Action Alternatives are located within both the existing and proposed ozone non-attainment areas.

3.2.5 Climate Change

Greenhouse gases (GHG) are chemical compounds in the Earth's atmosphere that allow incoming short-wave solar radiation but absorb long-wave infrared radiation re-emitted from the Earth's surface, trapping heat. Most studies indicate that the Earth's climate has warmed over the past century due to increased emissions of GHGs and that human activities affecting emissions to the atmosphere are likely an important contributing factor (US Energy Information Administration 2009).

Computer-based modeling suggests that rising GHG concentrations generally produce an increase in the average temperature of the Earth, which may produce changes in sea levels, rainfall patterns, and intensity and frequency of extreme weather events. Collectively, these effects are referred to as "climate change." The Intergovernmental Panel on Climate Change (IPCC), in its Fourth Assessment Report, stated that warming of the Earth's climate system is unequivocal and that warming is very likely due to anthropogenic GHG concentrations (IPCC 2007).

Climate is the composite of a region's generally prevailing weather conditions throughout the year, averaged over a series of years. Historical weather patterns within the Study Area are characterized by mild winters, hot summers, and low levels of rainfall consistent with the Sonoran Desert's arid climate. Temperatures in the Study Area show a consistent warming trend since recording began in 1896 (National Weather Service Forecast Office 2009), and recent warming in the Southwest has been "among the most rapid in the nation" (US Global Change Research Program 2010). Across the West, the increase in average temperature during the past five years has been 70 percent higher than in the world as a whole (Saunders et al. 2008). In Arizona, average temperature increases during winter and spring months have been greater than during the summer or fall, and increases in daily minimum temperatures have been more common than increases in daily maximum temperatures. Winter minimum temperatures in the Sonoran Desert now are higher, and freeze-free periods are longer, than at any time during the 20th century, a trend likely to continue into the future (Weiss and Overpeck 2005). Climate models' projections for the future of the western US consistently predict higher temperatures. Increases of 3.6 Fahrenheit (°F) (2°C) in both summer and winter are likely by 2050, as are annual increases of 7.2 to 9°F (4-5°C) by 2099 (Garfin et al. 2007).

3.2.5.1 Emission Sources

Greenhouse gases include CO_2, CH_4, N_2O, water vapor, and several trace gases. Some GHGs, such as CO_2, occur naturally and are emitted into the atmosphere through both natural processes and human activities, while others are created and emitted solely through human activities. The GHGs that enter the atmosphere due to human activities include CO_2 from the burning of fossil fuels, solid waste, and trees and wood products; CH_4 emitted during the production and transport of coal, natural gas, and oil, as well as by livestock, deforestation, and agricultural practices; N_2O from agricultural and industrial activities and the combustion of fossil fuels and solid waste; and fluorinated gases that result from a variety of industrial processes.

Total GHG emissions in the US rose 14.7 percent from 1990 to 2006. The primary GHG emitted by human activities in the United States is CO_2. It totals approximately 84.8 percent of all GHG emissions, with the largest source being fossil fuel combustion. According to the EPA Inventory of US Greenhouse Gas Emissions and Sinks (EPA 2008), CO_2 emitted in the US totaled 7,054.2 teragrams in 2006. These GHG emissions are partly offset by carbon sequestration in forests, trees, urban areas, and agricultural soils, which, in aggregate, offset 12.5 percent of total US emissions in 2006 (EPA 2008).

3.2.5.2 Global Effects

Global mean surface temperatures have increased nearly 1.8 °F from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24°N) have exhibited temperature increases of nearly 2.1°F since 1900, with nearly a 1.8°F increase since 1970 alone. The Intergovernmental Panel on Climate Change (IPCC) indicated that by the year 2100, global average surface temperatures would increase 2.5°F to 10.4°F above 1990 levels (IPCC 2007).

The National Academy of Sciences has confirmed these findings but also has indicated there are uncertainties regarding how climate change may affect different regions. Computer

model predictions indicate that increases in temperature will not be equally distributed but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures. Increases in temperatures would increase water vapor in the atmosphere, and reduce soil moisture, increasing generalized drought conditions, while at the same time enhancing heavy storm events (IPCC 2007).

The U.S. Climate Change Science Program (CCSP) coordinates climate change research conducted by the U.S. Government. In May of 2008 as a part of this program, an assessment was published entitled, "*The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity*" (CCSP 2008). The assessment report indicates that temperature increases, higher CO_2 levels in the atmosphere, and changes to patterns of precipitation will have significant effects on the resources in the western United States. This may impact:

- snowpack levels and timing of spring runoff,
- frequency of drought conditions and wildfires,
- moisture levels in soils,
- changes to growing seasons,
- species of plants, weeds, and insects present, and
- land use decisions.

3.2.5.3 Regional Effects

The average temperature in the Southwest has already increased approximately 1.5°F (0.83°C) above a baseline period of 1960-1990 and is projected to rise 4.0-10.0°F (2.2°C-5.6°C) by the end of the century (Justus and Fletcher 2007). It is not possible to predict with certainty the effects of climate change on local- or regional-scale ecosystems, but climate change is certain to affect natural and human systems within the Study Area and is likely to have a large impact on BLM management strategies. The 2007 Government Accountability Office (GAO) Report on Climate Change states:

Federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include, among others:

- Physical effects, such as droughts, floods, glacial melting, and sea level rise;
- Biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and,
- Economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses (GAO 2007).

In the Sonoran Desert, the most likely effects of climate change include the following:

- Higher average temperatures, particularly at night;
- Scarcer water supplies due to lower overall rainfall and earlier melting of upstream snowpack, resulting in earlier peak stream flows in the Salt, Verde, Gila, and Colorado Rivers in spring and potentially reduced flows in summer;
- More variable precipitation patterns than what is observed currently, including longer, more frequent droughts and more intense storms bringing increased flooding;
- Higher rates of soil erosion;
- Increased invasive plant species, particularly non-native annual grasses;
- Increased frequency and intensity of wildfires;
- Shifting habitats for wildlife, including the development of "novel" ecosystems in which species that have been geographically separate in the past begin to share habitat; and,
- Worsening air pollution problems as increased temperatures and drought contribute to ozone and PM_{10} production.

3.2.5.4 Water Supplies

The most important way climate change is likely to affect the Study Area is by decreasing already scarce water resources. Drought and flood cycles lasting months, years, or even decades are already a regular occurrence in the Sonoran Desert. An extended drought has gripped Arizona since the 1990s, and the total amount of water available for all uses—including wildlife and plants, ecosystem services, and human needs—is expected to decline as climate change advances (US Global Change Research Program 2010).

Currently, annual precipitation in Phoenix, which is adjacent to the Study Area, averages 7.63 inches, with wide seasonal variations. Historically, most rain falls during the summer monsoon and winter rainy seasons, while the spring and fall "shoulder" seasons may see no rain at all. The monsoon season, typically mid-July to mid-September, is defined by a shift in wind patterns that brings moisture up from the Gulf of California, the Gulf of Mexico, and the eastern Pacific.

Average rainfall increases during this time from just over a tenth of an inch in June to an inch or more in July (0.97 inch), August (1.03 inch), and September (0.84 inch) (National Weather Service Forecast Office 2009). The other half of the region's rain typically falls from December through March, when the winter rainy season brings in storms from the west and northwest. On average, these storms drop between three-quarters to one inch of rain per month, with December posting the highest monthly average (0.93 inch) from 1896-2008 (National Weather Service Forecast Office 2009). However, yearly rainfall is highly variable and rarely fits the "average" pattern (Sheppard et al. 2002). Under most climate change scenarios, storm intensity and attendant flooding are likely to become more common as the timing, location, and, potentially, the amount of precipitation shifts (Archer and Predick 2008). Nonetheless, the effect climate change will have on the overall amount of precipitation in Arizona is not clear.

The effect that higher temperatures, both observed and projected, will have on the region's water supplies is much clearer. Snowpack currently supplies approximately 70 percent of all water in the West (Saunders et al. 2008) and almost all the water to the rivers that flow into or adjacent to the Study Area. The timing and capacity of these supplies are dependent on overall precipitation and temperature, which determines when the snowpack melts. Recent years have seen snowmelt push the timing of peak stream flows in spring as much as a month earlier than normal, thereby reducing flows in the summer and fall, when demand typically peaks (Saunders et al. 2008; US Global Change Research Program 2010). Reduced stream flows in the summer will leave ecosystems more dependent on increasingly uncertain summertime rains. Further exacerbating this vulnerability is the increasing tendency of rain to fall during infrequent, large-scale events that drain quickly and cause flooding and soil erosion. Such changes to the hydrologic cycle of the Sonoran Desert could have massive impacts on the region's wildlife and vegetation.

3.2.5.5 Wildfires

Climate change-related shifts from desert to grassland ecosystems will also increase the risk of wildfire throughout the Sonoran Desert (GAO 2007; Archer and Predick 2008). Higher winter temperatures and earlier peaks in spring snowmelt runoff already have led to increases in both the frequency and intensity of wildfires in higher elevations of the Rocky Mountains (Westerling et al. 2006).

3.2.5.6 Species Migration and Extinction

Current conditions in the Sonoran Desert represent the extreme range for many plant species, and the combination of increasing temperatures and decreasing water availability is likely to shift the range of many plants and animals northward or even cause them to become extinct (Saunders et al. 2008; Weiss and Overpeck 2005). Increasing CO_2 concentrations also lead to fertilization and growth of specific plant species. Such shifts could bring the woody, herbaceous plants common to northern Mexico into areas now dominated by iconic succulents such as the saguaro cactus and native grasses (Saunders et al. 2008; Weiss and Overpeck 2005).

The "novel" ecosystems created by climate change-induced habitat shifts also could lead to significant management challenges as plants and animals that once were geographically distinct combine in new ways.

3.2.5.7 Air Pollution

As climate change causes an increase in air temperatures in the Study Area, pollutants such as O_3 and PM_{10} that are formed more readily in warm air are likely to increase and cause a decline in air quality. The Phoenix Metropolitan Area has already been designated as non-attainment for the eight-hour O_3 standard, and the Phoenix Area and Western Pinal County are non-attainment areas for PM_{10} standards. In Spring 2012, the EPA plans to designate the Phoenix-Mesa area as non-attainment for the revised primary eight-hour O_3 standard issued in 2008. As air quality decreases further due to climate change, there is a possibility that additional areas within Arizona and the Study Area could be designated as non-attainment areas for these pollutants.

3.2.6 Visibility

The federal PSD program is part of a larger pre-construction review and approval program called New Source Review (NSR). The overall purpose of the PSD Permitting Program, which applies to major sources of pollutants in areas currently meeting the NAAQS for those pollutants, is to: (1) protect public health and welfare from the effects of air pollution or exposure to pollutants that originated in the air and preserve attainment and maintenance of the NAAQS; (2) preserve, protect, and enhance air quality and visibility in national parks, national wilderness areas and other areas of special natural, recreational, scenic, or historic value; (3) provide for economic growth while preserving clean air resources; (4) prevent emissions from any source from interfering with objectives in any implementation plan aimed at preventing significant deterioration of air quality; and (5) assure that decisions to allow increased air pollution are made only after evaluating the related consequences and providing opportunities for public participation in the process (EPA 2010c). The federal NSR/PSD regulations are codified at 40 CFR §51.166 and §52.21. These requirements are incorporated into Arizona air quality permitting regulations, under Arizona Administrative Code (A.A.C.), Title 18, Chapter 2, Article 4.

Areas meeting criteria for relatively pristine air quality (and unique natural features on a national level) receive the highest level of air quality protection. International parks, national parks larger than 6,000 acres, national memorial parks larger than 5,000 acres, and national wilderness areas larger than 5,000 acres are designated as Class I areas. Class III is assigned to attainment areas where maximum industrial growth is allowed as long as the NAAQS are not exceeded (to date, no Class III areas have been designated). All other areas in the United States are designated Class II. **Figure 3.2-4** shows the Arizona Class I areas.

There are no Class I areas near the Study Area. The Superstition Wilderness and the Mazatzal Wilderness are both partially located in Maricopa County. These U.S. Forest Service Class I areas are located approximately 50 miles and 35 miles, respectively, from the eastern end of the Proposed Action route.

There are several BLM Wilderness Areas, National Monuments, and National Conservation Areas, designated as Class II areas in the vicinity of the Study Area. These include the Hassayampa River Canyon Wilderness, Hells Canyon Wilderness, North Maricopa Mountains Wilderness, Sierra Estrella Wilderness, Harquahala Wilderness, Hummingbird Springs Wilderness, Big Horn Mountains Wilderness, Agua Fria National Monument, and Sonoran Desert National Monument. These areas are protected under the CAA, but to a lesser extent than Class I areas. However, since electrical transmission lines are not typically a major source of air pollutants, a PSD impact analysis is unlikely to be required.

3.2.7 Emissions Status

Maricopa County has an ambient air monitoring network that is used to measure quantities of air pollution at monitored locations. These data are used for air modeling exercises and to evaluate the effectiveness of control measures that are implemented. There are three air quality monitors located near the Study Area. The Glendale monitor, located at 59th Avenue and West Olive, and the Dysart monitor, located at Bell Road and Dysart Road, collect ozone, CO, and PM_{10} data while the Zuni Hills monitor, located at 109th Avenue and Deer

Valley Road, collects PM_{10} data only. The data presented in **Table 3.2-3** below were published in "2010 Air Monitoring Network Review," by the MCAQD (2011).

Table 3.2-3 Summary of Monitoring Network Data at Selected Sites

SITE	CO 1-HOUR AVERAGE MAX (PPM)	CO 8-HOUR AVERAGE MAX (PPM)	OZONE 8-HOUR MAX (PPM)	OZONE 3-YEAR AVERAGE OF 4TH HIGHEST 8-HOUR (PPM)	PM_{10} 24-HOUR AVERAGE MAX ($\mu G/M^3$)	PM_{10} ANNUAL AVERAGE ($\mu G/M^3$)	NUMBER OF 24-HOUR NAAQS EXCEED-ANCES PM_{10}
Glendale	9.0	3.0	0.083	0.072	92[1]	22.9[3]	0
Dysart	2.0	0.9	0.082	0.069	81[2]	21.5[3]	0
Zuni Hills	-	-	-	-	70	20.7[4]	0

[1] The second highest 24-hour average value was 62 $\mu g/m^3$.
[2] The second highest 24-hour average value was 63 $\mu g/m^3$.
[3] Based upon 8648 samples.
[4] Based upon 8697 samples.

3.2.8 Existing Emissions Intensity of Grid Electricity

Greenhouse gases are emitted by fossil-fuel fired power plants as they produce electricity. The intensity of grid electricity is measured in units of tons of CO_2 equivalents per megawatt hour (MWh) of electricity generated. Information on intensity of grid electricity is collected by the EPA by subregion in the Emissions & Generation Resource Integrated Database (eGRID).The Project is located in the Arizona-New Mexico (AZNM) WECC southwest subregion. According to the EPA Clean Energy section, the fuel mix of the electricity generated in the Study Area (supplied by APS) results in CO_2 emissions of 1,253 lb per MWh compared to the national average of 1,293 lb per MWh (EPA 2007). The mix of power generating technologies in the WECC Southwest Region includes 40.2 percent coal, 36.2 percent natural gas, 14.8 percent nuclear, 5.9 percent hydroelectric, 2.7 percent other renewables, and 0.1 percent oil (EPA 2011d).

3.3 CULTURAL RESOURCES

3.3.1 Laws, Ordinances, Regulations, and Standards

Potential impacts on the cultural environment were assessed pursuant to Section 101(b)(4) of NEPA, which directs federal agencies to preserve important historical and cultural aspects of our nation's heritage. Other applicable federal laws and regulations also were addressed, particularly Section 106 of the National Historic Preservation Act, which directs federal agencies to consider the effects of their undertakings on properties listed in or eligible for the National Register of Historic Places (National Register), in consultation with the Advisory Council on Historic Preservation, SHPO, and other interested parties, including tribes with traditional cultural affiliation with the Study Area. To be eligible for the National Register

(Title 36, Code of Federal Regulations, Part 60), properties must be 50 years old (unless they are exceptionally important) and have national, state, or local significance in American history, architecture, archaeology, engineering, or culture. Historic properties may include places of traditional, religious, and cultural importance. They also must possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet at least one of four criteria:

- Criterion A: be associated with significant historical events or trends
- Criterion B: be associated with historically significant people
- Criterion C: have distinctive characteristics of a style or type, or have artistic value, or represent a significant entity whose components may lack individual distinction
- Criterion D: have yielded or have potential to yield important information

BLM also complies with the Archeological Resources Protection Act of 1979 (ARPA), the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA),), and the AIRFA when authorizing uses of public land. ARPA prohibits the collection of archaeological resources from public lands (and Indian lands) without a permit issued by the land managing agency, and establishes criminal and civil penalties for removal, sale, purchase, exchange, transportation, receipt, or offering of any archaeological resource obtained from public lands (or Indian lands) in violation of any provision, rule, regulation, ordinance, or permit under the act, or under any federal, state, or local law. BLM follows the ARPA implementing regulations (Title 43, Code of Federal Regulations, Part 7).

NAGPRA establishes rights of Indian tribes to claim ownership and repatriation of human remains, funerary objects, sacred objects, and objects of cultural patrimony held or controlled by federal agencies and museums that receive federal funds. Intentional excavations and inadvertent discoveries of such items must follow plans developed in consultation with Native Americans. BLM follows the NAGPRA regulations (Title 43, Code of Federal Regulations, Part 10).

AIRFA established a policy to protect and preserve for American Indians the inherent right of freedom to believe, express, and exercise their traditional religions, including but not limited to access to religious sites, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rites. BLM complies with AIRFA by obtaining and considering the views of Indian leaders when a proposed land use might conflict with traditional Indian religious beliefs or practices, and by avoiding unnecessary interference with Indian religious practices as projects are implemented. Frequently, issues arising from AIRFA are addressed through the Section 106 process and from that perspective all alternatives are consistent with AIRFA. In addition, all alternatives are consistent with the intent of RFRA in that issues arising from religious concerns receive consideration during the Section 106 process.

The Religious Freedom Restoration Act (RFRA) of 1993, PL No. 103-141, 107 Stat. 1488 (November 16, 1993). 42 U.S.C. § 2000bb through 42 U.S.C. § 2000bb-4, is a United States federal law aimed at preventing laws which substantially burden a person's free exercise of their religion. This act addresses religious freedom for every citizen and not just for Native Americans. It has been used to address some issues associated with the practice of Native

American religion on public lands. All alternatives are consistent with the intent of RFRA in that issues arising from religious concerns receive consideration during the Section 106 process.

Because the transmission line route crosses State Trust land, the cultural resource studies also support ASLD compliance with the State Historic Preservation Act, which requires consultation with the SHPO about projects that could affect properties listed in or eligible for the Arizona Register of Historic places (Arizona Register). The criteria for listing in the Arizona Register, which is maintained by the Arizona SHPO, are identical to those for the National Register. The inventory of cultural resources also supports ASLD compliance with the Arizona Antiquities Act, which directs persons in charge of activities on State lands to report the discovery of archaeological, paleontological, and historical sites or objects that are at least 50 years old to the director of the Arizona State Museum, and to conduct studies of cultural resources on State lands in accordance with permits issued by the museum.

On State, County, city, and municipal lands, Arizona Revised Statute 41-844 protects human remains and associated funerary objects in unmarked graves and abandoned cemeteries that exceed 50 years in age. This statute also protects sacred ceremonial objects and objects of cultural patrimony on State lands that have special importance to American Indians. On private lands, Arizona Revised Statute 41-865 provides similar protection. In the event of discovery of such remains, the Director of the Arizona State Museum must be notified and is required to consult with Indian tribes, direct kin, or groups that can show a relationship to human remains through cultural affinity in order to determine the appropriate treatment of the remains and materials.

3.3.2 Region of Influence (Area of Potential Effect)

The region of influence for NEPA analyses is the geographic area within which a proposed project and analyzed alternative actions may affect resources. The concept is similar to the Area of Potential Effects (APE), which is defined by regulations implementing Section 106 of the National Historic Preservation Act (Title 36, Code of Federal Regulations, Part 800) as the geographic area or areas within which an undertaking may alter the character or use of a property listed in or eligible for the National Register. The APE can vary for each type of potential direct, indirect, and cumulative impact on the cultural environment.

Ground disturbing activities associated with construction have the highest potential for disturbing or destroying significant cultural resources. Accordingly, the APE for direct impacts was defined to include the construction zones of the Project, which would be confined to the ROW acquired for the Project, access roads that might extend outside the ROW, and any temporary construction easements. The exact and final ROW width has yet to be determined, but is expected to be 125 to 200 feet wide. Access roads for construction and maintenance would be within the ROW unless topography requires deviations, which would not be determined until final designs are prepared after conclusion of the EIS process. Similarly, the need for temporary construction easements would not be determined until final designs are prepared, but it can be anticipated that extra workspace could be required for pulling and tensioning the conductors where the line turns.

In regards of defining the APE, potential indirect impacts could result from (1) visual changes stemming from the introduction of transmission line structures and conductors into

the settings of cultural resources, and (2) disturbance or vandalism due to increased public use resulting from vegetation clearing or new roads that enhance vehicle access to currently inaccessible areas.

Archaeological sites that are primarily important for their potential to yield important information may not be affected by visual changes. The integrity of setting and feeling of some sites types, such as historic trails and roads, historic buildings and structures, and traditional cultural resources, can be important aspects of their historic values, which could be affected by visual changes. Through analyses conducted in accordance with the BLM's visual resource management system, potential effects on cultural resources generally are evaluated at foreground and middle ground distances, which are defined as extending three to five miles. In conformance with that practice, the APE for cultural resources as related to visual impacts was defined as extending up to five miles beyond the Project Area. If warranted, this distance could be extended beyond five miles to analyze effects on specific sites or locations.

Studies have demonstrated that, in rural settings, unauthorized artifact collectors and vandals are much more likely to have diminished the integrity of archaeological and historical sites near roads than sites in more remote settings (Ahlstrom et al. 1992; Nickens et al. 1981; Simms 1986; Spangler 2006; Spangler et al. 2006). Although the impacts of unauthorized collection and vandalism vary with distances from roads, the types and visibility of sites also are important factors. For example, historic structures are more vulnerable than artifact scatters. It is anticipated that the potential for such impacts would be greatest within 300 to 600 feet of existing or new roads.

3.3.3 Cultural History

The cultural history of south-central Arizona is summarized in this section to provide a context for evaluating the cultural resources that could be affected by the Project (supporting technical reports include Kirvan et al. 2012; Rogge and Erickson 2007; Rogge et al. 2011). The cultural history of the area can be divided into several periods that reflect changing adaptations and lifeways, including Paleoindian, Archaic, Early Agricultural, Early Ceramic, Hohokam, Protohistoric, Ethnohistoric, and historic Euro-American periods.

The earliest human occupation of southern Arizona by Paleoindian hunters and gatherers dates to approximately 11,000 to 12,000 B.C. Paleoindian populations migrated seasonally, exploiting indigenous plants for food and hunting game that included now extinct megafauna, such as mammoths, bison, horses, and camels. Evidence of Paleoindian occupation in south-central Arizona is limited to isolated spear points, but significant Clovis culture sites of the Paleoindian period have been found along the San Pedro River in southeast Arizona. Archaeological sites of the subsequent Archaic period (circa 7500 to 2100 B.C.) are more common and have been documented in the valleys and foothills north of Phoenix. The Archaic period represents a continuation of a nomadic hunting and gathering lifeway, but one adapted to the climate of the Holocene period, which was warmer and dryer than the late Ice Age climate of the Paleoindian period. Archaic subsistence strategies targeted a wide variety of animal and plant resources.

During the Late Archaic/Early Agricultural period (circa 2100 B.C. to A.D. 50) some local populations in south-central Arizona began to grow domesticated crops, particularly maize,

as early as 2100 B.C. Early farmers also encouraged the growth of a variety of other local seed-bearing plants, such as amaranth and goosefoot, but continued to rely heavily on hunting game and gathering indigenous plants for food. Although sizeable villages dating to this period have been found along the Santa Cruz River in the Tucson Basin, they may not have been occupied year round. Few comparable sites have been found in the Phoenix Basin.

During the subsequent Early Ceramic period (A.D. 50 to 500), use of plain ware pottery containers became widespread, probably reflecting adoption of a more sedentary lifestyle. Around A.D. 500, red ware pottery began to be made, and villages of numerous pit houses were built around central plazas indicating multiple kin groups made a commitment to live together. That pattern seems to reflect increased reliance on farming, adoption of a more sedentary way of life, and the beginning of the Hohokam culture that occupied the region for about a millennium.

The remains of the village-dwelling Hohokam farmers overwhelmingly dominate the archaeological record of south-central Arizona, including areas along the Agua Fria River in the Project Area. The Hohokam culture is noted for extensive irrigation systems built along the Salt and Gila rivers. Canals were much more limited along the Agua Fria River, but fields with terraces and "waffle gardens" marked by rock walls and alignments are common. The Hohokam occupation is divided into a Classic period (circa A.D. 1150 to 1450) and three earlier pre-Classic periods, each of which are subdivided into phases based on changing styles of artifacts, houses, and burials. The Hohokam culture collapsed or changed so drastically that it disappeared from the archaeological record 500 to 600 years ago, for reasons that are not yet fully understood. Archaeological evidence of the subsequent Protohistoric period (circa A.D. 1450 to 1700) in south-central Arizona is meager.

Prehistoric archaeological sites within and near the Project Area are concentrated along the floodplain and terraces of the Agua Fria River and include village sites such as the Beardsley Canal site and Palo Verde Ruin, as well as remnants of agricultural fields and irrigation canals. Occupation appears to have been most intensive during the Hohokam pre-Classic period. Sites are sparser in upland areas away from the river and are limited primarily to artifact scatters and occasional rockshelters that reflect hunting and gathering of plant foods and raw materials, as well as travel through the region and short-term camps.

Spanish explorers first passed through southeastern Arizona in the early sixteenth century, but did not stay, and subsequent colonization in the late sixteenth century focused on the northern Rio Grande River valley in New Mexico. The Ethnohistoric period of south-central Arizona began in the late 1600s when Jesuit priests and soldiers traveled north from Colonial Spanish settlements in Mexico. They found Tohono O'odham (Papago) and Sobaipuri living in the Tucson Basin and surrounding uplands, and about a half dozen villages occupied by the closely related Akimel O'odham (Pima) on the middle Gila River. Groups that came to be known as the Pee Posh (Maricopa) lived along the lower Gila and Colorado River Valleys, and they migrated upriver to join the Akimel O'odham during the nineteenth century. The Salt River Valley within the Phoenix Basin was not intensively inhabited or used at that time because it was a contested zone between the territories of the Akimel O'odham villagers and their adversaries to the north and east—the Yavapai and Western Apache. Ethnohistoric evidence indicates that Yavapai occupied a vast territory overlapping the Project Area, stretching from Flagstaff in the northeast to Yuma in the southwest and Globe in the

southeast, with the territories of three Yavapai subtribes (Tolkapaya, Kewevkapaya, and Wipukpaya) bordering each other in the vicinity of Lake Pleasant (Khera and Mariella 1983). Archaeological evidence of the protohistoric and early historic period in the Project vicinity is limited, but several artifact scatters near Lake Pleasant have been dated to that period. Those artifact scatters are sometimes associated with rockshelters and have been identified as Yavapai sites on the basis of distinctive types of pottery, small arrow points, and slab metates (Stokes 2011; Telles and McConnell 2000).

The pace of settlement quickened after 1848, when land north of the Gila River was ceded to the United States at the end of the United States-Mexican War and was designated the New Mexico Territory. The United States acquired more land south of the Gila River in 1854 with the Gadsden Purchase. The Akimel O'odham and Pee Posh expanded their farms along the Gila River to supply food to the new immigrants, and, by the mid-1800s, they were an economic force and virtually the only effective military resistance against the Apache.

The 1860s brought a mining boom and an end to the isolation of the territory. While Mexican and Anglo miners feuded with each other over access to gold deposits, water, and timber, they were united in their hostility toward the Apache and Yavapai who resisted the newcomers. In 1863, during the Civil War, the Arizona Territory was separated from the New Mexico Territory. In 1865, Fort McDowell was established in the lower Verde River Valley to subdue the Apache and Yavapai. The U.S. Army stimulated settlement by protecting miners and farmers and creating a market for food and supplies. The conflict with the Apache and Yavapai lasted more than a decade until the 1870s, when most of the resisting groups surrendered and were moved to reservations.

In addition to mining, historical Euro-American interests in south-central Arizona focused on ranching, farming, and associated development of roads and railroads. Although Euro-Americans had lived in the Tucson Basin since the Colonial Spanish era, they did not establish settlements in the Salt River Valley until the late 1860s when farmers began excavating irrigation canals in the Hohokam fields that had lain abandoned for about four centuries. Jack Swilling, with the backing of some residents of Wickenburg, a mining community 50 miles northwest of the Salt River Valley, organized the Swilling Irrigating and Canal Company and in 1867 began digging a canal following the traces of remnant Hohokam canals in an area that is now at the northeastern edge of Sky Harbor International Airport. The success of the first settlers along the canal brought others to the valley. Swilling often is called the Father of Phoenix because of his efforts to restore the agricultural splendor of the aboriginal Hohokam culture.

Settlement of the Phoenix Basin was based primarily on irrigation agriculture, but Phoenix grew to be a commercial and governmental center and was designated as the capital of the Arizona Territory in 1889, after being in Prescott (1863-1867, 1877-1889) and Tucson (1867-1877). Settlement in the western part of the Phoenix Basin near the Project Area followed settlement of the Phoenix area by a decade or two and also was based on farming. Early agricultural development was largely confined to the areas irrigated centuries before by the Hohokam along the lower Salt River and Gila River. The Buckeye Canal was in operation by 1886 and was the stimulus for the founding of the Town of Buckeye (originally called Sydney) in 1889 and the community of Liberty in 1895. The construction of the Arizona Canal led to the founding of other farming communities, including Peoria in 1888

and Glendale in 1891. The completion of Roosevelt Dam on the Salt River in 1911 stimulated further development by providing a more stable supply of water for irrigation and protection from floods that damaged canal headings.

Agricultural development in the western Phoenix Basin north of the Buckeye Canal was thwarted by the limited availability of water, but attempts to develop an irrigation project along the lower Agua Fria River valley began in the 1880s. In the 1890s, William Beardsley and the Agua Fria Water and Land Company began building a diversion dam south of a stage stop called Frog Tanks (now beneath Lake Pleasant), but the structure was left unfinished until 1927 when it was completed in conjunction with the construction of Waddell Dam and the Beardsley Canal.

The Santa Fe, Prescott & Phoenix Railway reached Phoenix in 1895, providing another link to a transcontinental railroad. Morristown was founded along the railroad as Vulture Siding and served the Vulture Mine southwest of Wickenburg. By 1897, the siding was being used by passengers traveling to Castle Hot Springs and the name was changed to Hot Springs Junction, and a post office was established. The name was subsequently changed to Morristown, to honor George Morris, the first local inhabitant who discovered the Mack Morris Mine.

Wittmann originated as a flag stop along the railroad. The place was originally called Nada or Nadaburg, which was derived from the Spanish word *nada*, meaning nothing. A post office was established at Nada in 1920. As a community gradually developed, the name was changed in 1929 to Wittmann to honor one of the financial backers for rebuilding Walnut Grove Dam on the upper Hassayampa River after it was washed out by a flood.

World War I gave a boost to agricultural development in the general Project Area when the supply of long-staple cotton from Egypt and Sudan was cut off and supplies from Georgia declined due to boll weevil infestation. Long-staple cotton was essential for manufacturing rubber tires and the war greatly increased the demand for tires. The Goodyear Tire & Rubber Company of Akron, Ohio, purchased 24,000 acres (more than an entire township) of undeveloped land west of the Agua Fria River and embarked on raising cotton for the company's tire plants. Thousands of Mexican nationals and American Indians were recruited to work in the fields. Paul Litchfield managed Southwest Cotton, a wholly owned subsidiary of Goodyear, and the World War I farm headquarters and labor camps grew into a community that was named Litchfield Park. The town of Goodyear also was founded at that time.

Cotton prices plummeted and production shrank after the war ended. A dispute over water rights between the upstream Waddell Dam project and Southwest Cotton was resolved in the mid-1930s in favor of the upstream project, and farmland irrigated by the Beardsley Canal continued to be developed. The onset of World War II again stimulated development in the region. The Goodyear Aircraft Corporation built an aircraft plant employing 7,500 employees (mostly women) as wartime production peaked. The Litchfield Naval Air Facility was established to test and deliver aircraft produced by Goodyear. During World War II, Luke Air Field also was established north of Litchfield Park, stimulating additional growth. The base trained more than 13,500 advanced pilots during the war, making it the largest such training facility in the country.

Today LAFB continues to train fighter pilots, and farming continues to be pursued, but agricultural lands and undeveloped grazing lands in the western Phoenix Basin are now being rapidly urbanized. After World War II, Sunbelt retirement communities were developed. Youngtown, established in 1954, led the way, but Del Webb soon followed with Sun City, Sun City West, and most recently Sun City Grand. Circle City, an unincorporated development along US 60, is another of those retirement communities. El Mirage and Surprise are post-World War II towns that continue to grow. The sale of Goodyear Farms to the SunCor Development Company in 1987 is representative of the conversion of farmland to residential and commercial urban uses, facilitated by the completion of Interstate 10 and other freeways that have reduced driving times to the urban center of Phoenix. Upscale developers have turned their attention to the western Phoenix metropolitan area that is continuing to expand north toward Lake Pleasant and even to the west side of the White Tank Mountains and north of Sun City and Peoria.

In summary, the cultural history of the region is long and complex. The Project Area; however, is arid with few reliable water sources, with the exception of the Agua Fria River, or other types of natural resources and did not occupy center stage for much of that history.

3.3.4 Inventory Methods

Initial studies to inventory and evaluate archaeological, historical, and traditional cultural resources in the APE were conducted in conjunction with siting studies for the transmission line and preparation of an application for the ACC. Those studies involved preparation of a cultural resource overview that compiled information about prior cultural resource studies and cultural resources recorded within a study area that covered approximately 400 square miles (Rogge and Erickson 2007). That overview was based primarily on information about prior studies and recorded cultural resources documented in the AZSITE Arizona Archaeological Site and Survey Database (AZSITE), which is a geographic information system database that includes records of the AZSITE Consortium members (Arizona State Museum (ASM), Arizona State University (ASU), Museum of Northern Arizona, and SHPO), and participating agencies such as BLM. The listing of National Register properties and selected reports of prior studies also were reviewed. The compiled information was considered in evaluating alternatives during the initial siting studies.

Once the ACC route was certificated, a detailed records review (Class I inventory) compiled information about prior studies and recorded resources within two-mile wide corridors centered on the Proposed Action route within the ACC-certificated route for which a CEC was issued, and for two alternative routes. That information included AZSITE data as well as the results of other surveys and information on file at the BLM HFO and USBR Phoenix Area Office that has not yet been included in the AZSITE database. General Land Office plats on file at the BLM State Office also were reviewed for indications of potential unrecorded historical resources.

An intensive pedestrian (Class III) cultural resource survey of a study corridor 400 feet wide was conducted along the routes of the Proposed Action and Alternative 2 on public land adjacent to SR 74, as well as the route of the Proposed Action and the Sub-alternative on State Trust lands (Kirvan et al. 2012). The required ROW would be 200 feet wide, but a wider area was surveyed to take into account potential mapping errors of prior surveys and to

provide flexibility in siting the ROW to facilitate avoidance of impacts to cultural resources. No survey was conducted on public land along the Hayden-Rhodes Aqueduct of the CAP at the southwestern end of the Project because it had been intensively surveyed and subjected to data recovery investigations before the aqueduct was constructed. Subsequently, a supplemental Class III survey was conducted to: 1) provide additional inventory data along the east side of the Agua Fria River, so that an alignment shift could be considered to avoid National Register-eligible sites, and 2) inventory cultural resources on private lands crossed by the proposed alignment (Rogge and Kirvan 2013). A field survey was conducted on private lands along the route where rights-of-entry were granted. To fulfill its responsibilities under Section 106 and as a condition of a ROW grant, BLM would require Class III inventories of any private lands not inventoried to identify and assess the effects on any historic properties prior to development.

3.3.5 Known Cultural Resources

During the siting study for the Project and preparation of the CEC application, a cultural resource constraints analysis was conducted for an approximately 400-square-mile area (Rogge and Erickson 2007). Review of the AZSITE database identified 299 prior cultural resource studies, which included cultural resource surveys that covered approximately 20 percent of the siting study area. The review identified 541 previously recorded archaeological and historical sites within the large siting area. Most of the prehistoric archaeological sites are scatters of artifacts representing short-term uses or temporary camps, but also included a major ground stone quarry and a few large habitation sites, including the Casa Piedras, Eastwing, and Beardsley Canal sites. Historic sites included trash scatters and sites related to mining, transportation, ranching, and farming, including the historic Beardsley Canal. Those sites reflect settlement of the area during the late nineteenth century and the first half of the twentieth century. Only one of those resources—the Morristown Store—is listed in the National Register or Arizona Register, but a large percentage of the other resources may be eligible for listing, primarily for their potential to yield important information about the prehistory and history of the area.

A Class I inventory was prepared to update the earlier records review for an area encompassing the routes of the Proposed Action and Action Alternatives and a surrounding one-mile-wide buffer. Intensive pedestrian survey (Class III inventory) was conducted along the routes of the Proposed Action and Alternative 2 on public land managed by BLM adjacent to SR 74 and along the Proposed Action and Sub-alternative routes on State Trust land.

3.3.5.1 Proposed Action

A total of 24 archaeological and historical sites have been identified within the 200-foot wide Proposed Action route ROW (**Table 3.3-1**). The sites include six prehistoric sites, 16 historic sites, and two sites with both prehistoric and historic components. Five of the sites are on public land managed by BLM, 17 are on State Trust land, and two are on privately owned land.

BLM, in consultation with the SHPO, determined that nine of these sites are eligible for the National Register. Four of the six prehistoric sites and the two prehistoric components of the multi-component sites AZ T:3:350(ASM) and AZ T:3:351(ASM) are recommended eligible

for the National Register under Criterion D for their potential to yield important information about the prehistoric occupation of the region. Prior data recovery studies at the most substantial of these sites, AZ T:3:10(ASM), documented evidence of habitation (two pit houses, one cobble structure, and abundant trash) and recovered three secondary cremations. That site, which is located on a terrace of the Agua Fria River, was interpreted as a seasonal Hohokam farmstead occupied intermittently between the Colonial and early Classic periods (circa A.D. 800 to 1300) (Green 1989). Although data recovery studies were conducted at that site in the 1980s, parts of the site likely remain intact. Three other Hohokam sites along the Agua Fria River, including sites AZ T:3:11 and multicomponent sites AZ T:3:350, and 351(ASM) also might have buried habitation features or could be temporary, limited activity sites.

The Hohokam also probably intermittently occupied a rockshelter at site AZ T:3:325(ASM) in the uplands west of the river. Excavations at similar rockshelters in the vicinity indicate the Yavapai also commonly used these rockshelters long after the Hohokam era.

There are two prehistoric sites in the uplands west of the Agua Fria River. Site AZ T:3:348(ASM) is a small outcropping of fine-grained basalt that was exploited for toolstone. All the artifacts at the site, except for a single potsherd, are flaked stone knapping debris. It is estimated that the site could contain several thousand artifacts. This site is considered eligible for the National Register under Criterion D for its potential to yield information on the use of raw material sources and initial manufacturing techniques for stone artifacts. The other site is a very sparse scatter of flaked stone without features, AZ T:3:349(ASM), and is ineligible for the National Register.

Another prehistoric site, AZ T:6:42(ASM), had a rock ring, a rock pile, three scatters of flaked stone, and 13 isolated occurrences of artifacts dispersed across approximately 500 acres along the east side of the Hassayampa River. Data recovery studies were conducted at the site before the Hayden-Rhodes Aqueduct and Hassayampa Pumping Plant, components of the CAP, were constructed. All or most of the site was subsequently disturbed or destroyed, and it is no longer considered eligible for the National Register.

Three of the 16 historic resources, all previously recorded, are eligible for the National Register. The Santa Fe, Prescott & Phoenix Railway, which was completed from the Santa Fe main line at Ash Fork to Prescott in 1893 and between Prescott and Phoenix in 1895, was previously evaluated as eligible under Criterion A for its association with the history of railroad transportation in Arizona. BNSF Railway continues to operate the line and historic materials have been replaced and the railroad has the appearance of a modern railroad.

The Beardsley Canal also was previously evaluated as eligible for the National Register under Criterion A for its association with development of irrigation systems in the Phoenix Basin. Construction of the canal began in 1892 in conjunction with the construction of the Dyer Diversion Dam on the Agua Fria River, but construction of the dam and canal stopped in 1895 due to flooding and financial difficulties. The canal was completed in 1926 and 1927 in conjunction with construction of the Frog Tanks Dam (subsequently renamed Waddell Dam). The proposed route also would span the historic Beardsley Canal (three times).

US 60/70/89 was previously evaluated as eligible for the National Register under Criterion D, for its potential to yield important information about the historic state highway system

developed between 1912 and 1955. In 1913, the precursor of the highway was described as a very bad road parallel to the Santa Fe, Prescott & Phoenix Railway, but by 1922 it was categorized as an improved gravel road and was paved and designated a state highway by 1935.

The other 13 historical sites are evaluated as ineligible for the National Register. One site, AZ T:2:47(ASM), is the remains of a historic homestead. Four of those sites are dumps or scatters of domestic trash with no features other than artifact concentrations: AZ T:2:145, 146, 147(ASM), and AZ T:3:347(ASM). Another scatter of domestic trash at site AZ T:2:144(ASM) is associated with a small concrete-lined basin of undetermined function. The trash at those sites dates between the 1920s and 1960s, and the origin of the trash is unknown.

Six of the remaining historic resources are roads. No artifacts have been recorded along two of those: AZ T:3:200 and 201(ASM). A few artifacts have been recorded along segments of the four other two-track roads: AZ T:2:148(ASM), AZ T:3:344, 346, and 352(ASM). Those minor local roads probably date to the first half of the twentieth century. Further study of those roads is unlikely to yield important information and no other historic values warranting preservation have been identified.

Site AZ T:3:345(ASM) has a prospect shaft approximately 20 feet deep and a few cans. The site appears to postdate 1940. Further study of the site is unlikely to yield important information and no other historic values warranting preservation have been identified.

The three rock features at the historic component of site AZ T:3:350(ASM) are enigmatic and the trash is limited. Further study of those sites is unlikely to yield important information and no other historic values warranting preservation have been identified. The trash scatter at the multi-component site AZ T:3:351(ASM) is older, dating from circa 1880 to 1910, and may relate to the first attempt to construct the Beardsley Canal. Because further study of the historic component (and the prehistoric component) has potential to yield important historical information, the site is evaluated as eligible for the National Register under Criterion D.

3.3.5.2 Alternative 1

In addition to granting a ROW for the Proposed Action route, Alternative 1 would amend the BLM Bradshaw-Harquahala RMP to designate a 0.5-mile wide multiuse utility corridor on BLM-managed public land crossed by the Proposed Action route along the north side of SR 74, as well as the entire BLM parcel crossed by the Proposed Action route south of SR 74.

Previous surveys discovered one historical site (**Table 3.3-1**) in addition to the five sites encountered by the Class III survey (AZ T:3:325, 345, 346, 347, and T:3:348(ASM)). Site AZ T:3:331(ASM), located on the north side of SR 74, is a scatter of 1930s to 1940s trash that might represent an ephemeral camp. The site was previously evaluated as having no historic values that would make it eligible for the National Register. In addition, the historic road designated AZ T:3:201(ASM) is crossed by the Proposed Action route south of SR 74, but continues into the proposed multiuse utility corridor on the north side of the highway.

These seven sites within the 0.5-mile wide multiuse utility corridor are in addition to the other 18 sites along the Proposed Action route, under Alternative 1.

3.3.5.3 Alternative 2

Nineteen archaeological sites and historical resources were identified along the 200-foot wide Alternative 2 route (**Table 3.3-1**). No additional sites have been recorded along the segment of the Alternative 2 route south of SR 74 that diverges from the Proposed Action route.

Like Alternative 1, Alternative 2 also would designate the entire BLM parcel crossed by Alternative 2 south of SR 74 as a multiuse utility corridor.

3.3.5.4 Alternative 3

Sixteen archaeological and historical resources have been recorded within inventoried portions of the 200-foot-wide ROW along the Alternative 3 route, including 4 prehistoric sites and 12 historic resources (**Table 3.3-1**).

The prehistoric sites include one that also is along the Proposed Action and Alternative 2 routes, AZ T:6:42(ASM). As described above, data recovery studies were conducted at that site before the Hayden-Rhodes Aqueduct and Hassayampa Pumping Plant, components of the CAP, were constructed and all or most of the site was subsequently disturbed or destroyed and it is no longer considered eligible for the National Register.

The other prehistoric sites are Hohokam farmsteads, T:3:19(ASM), T:3:20(ASM), and T:3:21(ASM), are located near the Agua Fria River. These sites are considered eligible for the National Register for their potential to yield important information. Data recovery studies were conducted at T:3:21(ASM) in the 1980s, but it was only partially excavated and parts of the site probably remain partially intact (Green 1989).

All 13 historical resources are also along the Proposed Action route and are described above. Those resources include the National Register-eligible Santa Fe, Prescott & Phoenix Railway (AZ N:3:32(ASM)), Beardsley Canal (AZ T:3:55(ASM)), and US 60/70/89 [AZ V:2:101(ASM), AZ C:2:174(ASM), AZ I:3:10(ASM)]. The other nine historical resources are evaluated as ineligible for the National Register because further study is unlikely to yield important information and no other historic values warranting preservation of those resources have been identified. Those ineligible historic resources include one historic homestead: AZ T:2:47(ASM) and four dumps or scatters of circa 1920s to 1960s domestic trash: AZ T:2:144, 145, 146, and 147(ASM). Five of the other ineligible historic resources are minor local roads, AZ T:2:148(ASM), AZ T:3:200, 201, 344, and 352(ASM). Sites AZ T:3:200 and 201(ASM) were previously recorded near SR 74, but maps indicate that the roads extend 2 miles to the south and cross the Alternative 3 route.

3.3.5.5 State Trust Land Route Variation Sub-alternative

A records review of the four-mile-long State Trust lands Route Variation Sub-alternative identified no prior cultural resource survey within a 400-foot-wide study corridor along that Sub-alternative, and no prior cultural resource studies within one mile of the route variation in addition to those identified by the records review for the Proposed Action and Action Alternative routes. The records review also identified no additional archaeological or historical sites recorded in the 400-foot-wide study corridor or within one mile.

The State Trust lands Route Variation Sub-alternative was defined after the Class III field survey was completed, and therefore it has not been intensively surveyed for cultural resources. It is estimated that about 86 percent of the Proposed Action route using the State Trust Lands Route Variation Sub-alternative, rather than the originally proposed alignment (Primary Segment), has been surveyed for cultural resources, leaving about 194 acres of State Trust land and 64 acres on private land unsurveyed. One historic resource, AZ T:2:144(ASM), has been recorded along this route (**Table 3.3-1**). This site is not eligible for the National Register and was described under the Proposed Action.

3.3.5.6 Primary Segment Common to All Action Alternatives

There are four sites along the Primary Segment (AZ T:2:144, 145, 146, and 147). These are discussed under the Proposed Action and presented in **Table 3.3-1**. All are historic sites not eligible for inclusion on the National Register.

Table 3.3-1 Known Cultural Resource Sites along the Proposed Action and Action Alternative Routes, including the Sub-alternative

(Footnotes at end of table.)

SITE NUMBER AND/OR NAME	SITE TYPE	NATIONAL REGISTER STATUS	LAND STATUS	PROPOSED ACTION	ALT. 1	ALT. 2	ALT. 3
AZ N:3:32(ASM) Santa Fe, Prescott & Phoenix Railway	Historic railroad	Eligible, Criterion A	Private, State, Bureau of Reclamation	X	+	X	X
AZ T:2:47(ASM)	Historic Homestead	Not eligible	State and Private	X	+	X	X
AZ T:2:144(ASM) SVM-1	Historic concrete basin with artifacts	Not eligible	Private and State	X**	+	X**	X**
AZ T:2:145(ASM) SVM-2	Historic domestic trash	Not eligible	State	X*	+	X*	X*
AZ T:2:146(ASM) SVM-3	Historic domestic trash	Not eligible	State	X*	+	X*	X*
AZ T:2:147(ASM) SVM-4	Historic domestic trash	Not eligible	State	X*	+	X*	X*
AZ T:2:148(ASM) SVM-7	Historic road with artifacts	Not eligible	Private and State	X	+	X	X
AZ T:3:10(ASM) AZ T:3:9(ASU)	Prehistoric farmstead	Eligible Criterion D	State	X	+	X	
AZ T:3:11(ASM)	Prehistoric artifact scatter	Eligible, Criterion D	State	X	+	X	

Table 3.3-1 Known Cultural Resource Sites along the Proposed Action and Action Alternative Routes, including the Sub-alternative (Continued)

(Footnotes at end of table.)

SITE NUMBER AND/OR NAME	SITE TYPE	NATIONAL REGISTER STATUS	LAND STATUS	PROPOSED ACTION	ALT. 1	ALT. 2	ALT. 3
AZ T:3:19(ASM) AZ T:3:17(ASM)	Prehistoric farmstead	Eligible, Criterion D	Bureau of Reclamation				X
AZ T:3:20(ASM) AZ T:3:18(ASM)	Prehistoric farmstead	Eligible, Criterion D	Bureau of Reclamation				X
AZ T:3:21(ASM) AZ T:3:6(ASM) AZ T:3:6(ASU)	Prehistoric farmstead	Eligible, Criterion D	State and Bureau of Reclamation				X
AZ T:3:55(ASM) Beardsley Canal	Historic irrigation canal	Eligible, Criterion A	Private, State, Bureau of Reclamation	X	+	X	X
AZ T:3:200(ASM)	Historic road	Not eligible	State	X	+	X	X
AZ T:3:201(ASM)	Historic road	Not eligible	BLM	X	X	X	X
AZ T:3:325(ASM) SVM-13	Prehistoric rock shelter with artifacts	Eligible, Criterion D	BLM	X	X	X	
AZ T:3:331(ASM)	Historic camp	Not eligible	BLM		X		
AZ T:3:344(ASM) SVM-8	Historic/modern roads with artifacts	Not eligible	Private and State	X	+	X	X

Table 3.3-1 Known Cultural Resource Sites along the Proposed Action and Action Alternative Routes, including the Sub-alternative (Continued)

(Footnotes at end of table.)

SITE NUMBER AND/OR NAME	SITE TYPE	NATIONAL REGISTER STATUS	LAND STATUS	PROPOSED ACTION	ALT. 1	ALT. 2	ALT. 3
AZ T:3:345(ASM) SVM-9	Historic/modern prospecting	Not eligible	BLM	X	X		
AZ T:3:346(ASM) SVM-10	Historic road with artifacts	Not eligible	BLM	X	X		
AZ T:3:347(ASM) SVM-11	Historic domestic trash	Not eligible	BLM	X	X		
AZ T:3:348(ASM) SVM-12	Prehistoric toolstone procurement site	Eligible, Criterion D	BLM	X	X		
AZ T:3:349(ASM) SVM-14	Prehistoric artifact scatter	Not eligible	State	X	+	X	
AZ T:3:350(ASM) SVM-16	Prehistoric artifact scatter and historic rock features with artifact scatter	Eligible, Criterion D	State	X	+	X	
AZ T:3:351(ASM) SVM-17	Prehistoric and historic artifact scatters	Eligible, Criterion D	State	X	+	X	
AZ T:3:352(ASM) SVM-18	Historic road with artifacts	Not eligible	State	X	+	X	X

Table 3.3-1 Known Cultural Resource Sites along the Proposed Action and Action Alternative Routes, including the Sub-alternative (Continued)

(Footnotes at end of table.)

SITE NUMBER AND/OR NAME	SITE TYPE	NATIONAL REGISTER STATUS	LAND STATUS	PROPOSED ACTION	ALT. 1	ALT. 2	ALT. 3
AZ T:6:42(ASM) AZ T:6:2(ASU)	Prehistoric rock features with artifacts	Eligible, Criterion D	Private	X	+	X	X
US 60/70/89 AZ V:2:101(ASM) AZ C:2:174(ASM) AZ I:3:10(ASM)	Component of historic state highway system	Eligible, Criterion D	Private and State	X	+	X	X
Total				**24**	**7+**	**20**	**17**

*These three sites are along the Primary Segment Sub-alternative

**This site is along both the State Trust Land Route Variation Sub-alternative and the Primary Segment

+These sites are within the 0.5-mile wide multiuse utility corridor only; this alternative also includes the Proposed Action route and 18 associated sites outside the proposed 0.5-mile corridor

3.3.6 Cultural Resources Sensitive to Indirect Visual Impacts

Some types of cultural resources outside the direct construction impact zones could be sensitive to visual impacts of a new transmission line if their settings are an important aspect of their historic values. Such resources could include historic properties with special designations to promote their preservation, such as BLM-designated areas of critical environmental concern; properties listed in the National Register or Arizona Register; and interpretive sites or other properties for which there is substantial agency, tribal, or public sentiment for preservation of the property and its setting. Resources potentially sensitive to visual impacts were identified to a distance of five miles from the Proposed Action and Action Alternative routes by reviewing the AZSITE Cultural Resources Inventory, National Register listings, maps of the Project vicinity, and selected prior studies, particularly a study conducted to identify the 20 prehistoric and historic resources that best illustrate the heritage of the western Phoenix Basin (Rodgers and Dallett 2000). In addition to the Beardsley Canal and the Santa Fe, Prescott & Phoenix Railway identified in the records review for the routes of the Proposed Action and Alternatives 2 and 3, the review identified six other resources within the 5-mile visual APE (**Table 3.3-2**).

As discussed above, prior evaluations have concluded that the Santa Fe, Prescott & Phoenix Railway (AZ N:3:32(ASM)) and the Beardsley Canal (AZ T:3:55(ASM)) are eligible for the National Register under Criterion A. The BNSF Railway continues to operate the railroad, which has been upgraded and original materials have been replaced and the adjacent US 60/70/89, which has been upgraded and has the appearance of a modern highway, has altered the setting of the railroad within the visual APE, which crosses relatively level terrain and does not exhibit any of the topographic engineering challenges of the northern part of the line, which led the railroad to be nicknamed the Peavine.

The Maricopa Water District continues to operate the Beardsley Canal (AZ T:3:55(ASM)), which has been upgraded and has the appearance of a modern irrigation canal in the APE. The setting of the canal has been altered by the parallel modern CAP New Waddell Canal that transports water in and out of Lake Pleasant from the Hayden-Rhodes Aqueduct.

The Morristown Store is on the northeast side of US 60/70/89 about four miles northwest of where a common segment of the routes of the Proposed Action and Alternatives 2 and 3 would cross the highway. The store was built in the 1890s and is located along the Santa Fe, Prescott & Phoenix Railway near the railroad's junction with Castle Hot Springs Road. The building was used at times as a department store, hotel, boarding house, and post office, and was listed in the National Register in 1991 under Criterion A.

The Surly site (AZ T:4:13(ASM)) is the remnants of a Hohokam field and irrigation canal system that used water from the western channel of New River. The site, which is about three miles southeast of the Morgan Substation, covers about 110 acres and was evaluated as eligible for the National Register for its potential to yield important information (Criterion D). Data recovery studies were conducted to mitigate the impacts of potential inundation of the site behind New River Dam, a flood control structure built by the U.S. Army Corps of Engineers. Those studies documented that the site probably was used seasonally during the Sedentary period (circa A.D. 1000 to 1150). The Hayden-Rhodes Aqueduct was subsequently built along the northern edge of the field system.

Table 3.3-2 Cultural Resources Potentially Sensitive to Visual Impacts

SITE NAME AND /OR NUMBER		DESCRIPTION	NATIONAL REGISTER STATUS
1	Santa Fe, Prescott & Phoenix Railway AZ N:3:32(ASM)	Historical railroad, completed between Prescott and Phoenix in 1895	Eligible, Criterion A
2	Beardsley Canal AZ T:3:55(ASM)	Main irrigation canal of Maricopa Water District completed in 1927 in conjunction with construction of Waddell Dam	Eligible, Criterion A
3	Morristown Store (#91001003)	1890s building used at various times as department store, hotel, boarding house, and post office	Listed 1991, Criterion A
4	Surly Site AZ T:4:13(ASM)	Small intact Hohokam irrigation system that used water from the western channel of New River	Eligible, Criterion D
5	Calderwood Butte Archaeological District	Cluster of prehistoric archaeological sites in vicinity of Calderwood Butte, including large Hohokam village sites of Casa de Piedras	Eligible, Criterion D
6	Seymour III AZ T:2:27(ASM)	Circa 1879-1880 mining settlement with stamp mill that processed ore from Vulture Mine	Eligible, Criterion D
7	New Waddell Dam, CAP	Dam built between 1987 and 1992 to store and regulate Colorado River water imported by the Hayden-Rhodes Aqueduct	Not yet of historic age
8	Agua Fria and New River Siphons, CAP	Features of the Hayden-Rhodes Aqueduct built between 1975 and 1978 to transport flows of aqueduct beneath the Agua Fria River and New River	Not yet of historic age

Note: These sites are along or within five miles of the routes of the Proposed Action, the Action Alternatives, and the Sub-alternative.

In the 1970s, a cluster of prehistoric archaeological sites along the Agua Fria River approximately four to five miles south of the Project Area was defined as the Calderwood Butte Archaeological District. A National Register nomination was drafted for the district but never submitted for listing. The City of Peoria has designated the butte as a preserve, but housing developments have been built at the southern and eastern bases of the butte. The largest of the many sites within the district appears to be a large Hohokam village site known as Casa de Piedras. That site and others within the district have been damaged by unauthorized excavation, but many sites in the district are still likely to retain sufficient integrity that they could yield important information about the prehistoric occupation of the area and therefore are eligible for the National Register under Criterion D.

The Seymour III site (AZ T:2:27(ASM)) is the relatively well preserved archaeological remnants of a historic mining settlement about four miles northwest of a segment of the transmission line common to the Proposed Action and Alternatives 2 and 3. Between 1879 and 1880, a stamp mill was operated at Seymour to process gold ore from the famous Vulture Mine. The site has remnants of the stamp mill foundation, two blacksmith work areas, and a large scatter of historical artifacts. The site recorder recommended that the site be considered eligible for the National Register under Criterion D for its potential to yield important information.

Three of the 20 prehistoric archaeological and historical resources that Rodgers and Dallett (2000) identified as best illustrating the cultural heritage of the western Phoenix Basin included features of the CAP: New Waddell Dam and the Agua Fria and New River siphons of the Hayden-Rhodes Aqueduct. The New Waddell Dam, constructed between 1987 and 1992, replaced the original, smaller Waddell Dam and was designed to store and regulate water imported from the Colorado River by the Hayden-Rhodes Aqueduct. The Agua Fria and New River siphons, built between 1975 and 1978, are features of the Hayden-Rhodes Aqueduct that transport water flows beneath the Agua Fria River and New River to avoid damage by flood flows. The siphons reflect one of the many challenges that had to be met during the design and construction of the CAP, which provides a water supply vital for the growing Phoenix and Tucson metropolitan areas and the agricultural economy of south-central Arizona. Those structures might very well be considered historically significant in the future, but they are not yet of historic age (50 years old or older).

3.3.7 Native American Land Use and Cultural Affiliation

The BLM is consulting with federally recognized Indian tribes that have a cultural affiliation based on traditional use, ancestral ties, and/or oral histories associated with the Study Area. These tribes include O'odham groups who currently reside at the Salt River Pima-Maricopa Indian Community, Gila River Indian Community, Ak-Chin Indian Community and Tohono O'odham Nation; Yavapai residing at the Yavapai Prescott Indian Tribe, Fort McDowell Yavapai Nation, and Yavapai-Apache Nation; and the Hopi Tribe.

O'odham people who lived in the Salt River Valley during historic times were also known as the Pima or Akimel O'odham. Pima settlements were concentrated along the Salt and Gila Rivers, but their inhabitants frequently traveled into the desert to hunt game and gather wild plant foods (Fontana 1983). The Study Area was at the northwestern edge of Pima territory, where people hunted deer and rabbits and gathered cactus fruits and other natural resources.

Groups of the Southeastern Yavapai inhabited portions of the Bradshaw Mountains and Hieroglyphic Mountains to the north of the Study Area and likely traveled into the area to hunt game and gather wild plant foods (Khera and Mariella 1983). The Yavapai were more mobile than the Pima and traveled widely to exploit a variety of food resources. They also grew crops at locations with sufficient water, such as the Castle Hot Springs area northwest of present-day Lake Pleasant. Archaeological surveys and investigations have documented Yavapai sites in areas near Lake Pleasant (Keller et al. 1998; Stokes 2011).

The "Four Southern Tribes" (O'odham and Pee Posh), which include the Ak-Chin Indian Community, Gila River Indian Community, Salt River Pima-Maricopa Indian Community, and Tohono O'odham Nation are recognized as being culturally affiliated with the prehistoric

late Archaic Transition and Hohokam cultures of the Phoenix Basin. The Hopi Tribe also claims cultural affiliation with the Archaic and Hohokam cultures because traditional stories of some Hopi clans indicate they migrated to the current Hopi villages from the south. The Pee Posh (Maricopa) are recognized as having cultural affiliation with the prehistoric Patayan culture of the lower Gila River valley.

The Yavapai are recognized as having cultural affiliation with the prehistoric Patayan culture of upland desert areas of west-central Arizona. Early Euro-American explorers, as well as ethnohistorians and ethnologists documented that the project area was at the southern margins of the territory occupied by the Yavapai during the historic period.

3.4 GEOLOGY AND MINERALS

The information provided in the following subsections is taken from a report titled *Environmental Resource Report for Geology and Minerals, Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012c). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review.

3.4.1 Laws, Ordinances, Regulations, and Standards

Permitted activities that may affect or be affected by geologic resources and geologic hazards are governed primarily by local jurisdictions. The conservation elements and seismic safety elements of city and county general plans contain policies for protection of geologic features and avoidance of hazards, but do not specifically address transmission line construction projects. Local grading ordinances establish detailed procedures for construction. The following section provides a summary of international, federal, state, and local laws, regulations, and standards that govern permitted activities that may affect or be affected by geology and minerals in the Study Area.

International Building Code – The 2006 International Building Code (IBC) is a model building code developed by the International Code Council (ICC). The IBC sets rules specifying the minimum acceptable level of safety for constructed objects such as buildings. It has been adopted throughout most of the United States. The IBC has no legal status until it is adopted or adapted by government regulation. The IBC was developed to consolidate existing building codes into one uniform code that provides minimum standards to ensure the public safety, health, and welfare insofar as they are affected by building construction and to secure safety to life and property from all hazards incident to the occupancy of buildings, structures, or premises. The IBC replaced the Uniform Building Code (UBC) in 2000.

Federal Land Policy and Management Act of 1976, as amended – FLPMA established policies and goals to be followed in the administration of public lands by the BLM. The intent of FLPMA is to protect and administer public lands within the framework of a program of multiple-use and sustained yield, and to maintain environmental quality. Particular emphasis is placed on protection of the quality of scientific, scenic, historic, ecological, environmental, air and atmospheric, water resources, and archeological values. FLPMA dictates how BLM regulates mineral resources extraction on BLM land.

Classification and Multiple Use Act of 1964 – This act authorized the Secretary of the Interior to classify and manage BLM land for retention or disposal and for multiple use, including specification of dominant uses and preclusion of inconsistent uses in an area.

Mining and Mineral Policy Act of 1970 – This act declared that the federal government policy is to encourage private enterprise in the development of a sound and stable domestic mineral industry and in orderly and economic development of mineral resources, research, and reclamation methods.

Other relevant laws and regulations include the following:

- Mining Law of 1872 as amended, 30 USC § 22 et seq.
- Public Law 167 of 1955, 30 USC § 601 et seq.
- National Materials and Minerals Policy Research Development Act of 1980
- Materials Act of 1947, 30 USC § 601, as amended
- Mineral Leasing Act of 1920, as amended, 30 USC § 181 et seq.
- Mineral Leasing Act for Acquired Lands of 1947, as amended, 30 USC § 351 et seq.
- Section 402 of Reorganization Plan No. 3 of 1946
- 43 CFR 3400, 3500, 3600, 3715, 3802, and 3809

3.4.2 Regional and Local Geology

The Basin and Range topography of central Arizona consists of broad alluvial valleys or basins, bordered by mountainous terrain of igneous, metamorphic, and sedimentary rocks. The basins are broad and low sloping. Beneath the basin floor are permeable unconsolidated to moderately consolidated alluvium or loosely compacted alluvial sand and gravel. Alluvium fills the basins to depths of as much as 10,000 feet. The valleys are deeply filled with alluvium that has eroded from adjacent mountains during the last 10 million years. This aggradation has been driven by tectonism and climate change, although regional tectonic stability within the last five million years suggests that climate change is the more recent dominant driving force (Arizona Geological Survey [AZGS] 1987; AZGS 1988a; AZGS 1988b) (see the Environmental Resource Report for Air Quality and Climate Change for additional information, URS 2012b).

The Project is located within the northwestern margin of the Phoenix Basin. Most of the bedrock exposed within the Study Area is confined to the Saddleback Mountain area of the southeastern Hieroglyphic Mountains. It is composed of schist, metamorphosed granite, and rhyolite with some outcrops of basalt (**Figure 3.4-1**). Landforms in this area include alluvial fans, pediments, and stream terraces that lie between the Agua Fria and Hassayampa Rivers (AZGS 1987; AZGS 1988a; AZGS 1988b). Ephemeral streams originating in the Hieroglyphic Mountains flow southward into the basin and then southeast toward the Agua Fria River. Other ephemeral streams flow southwest to the Hassayampa River. Drainages located near Wittmann originate on the tread of an early Pleistocene terrace of the Hassayampa River and flow southeastward toward the Agua Fria River (AZGS 1994).

Most of the Study Area is underlain by coalesced alluvial fans. Alluvial fans in the upper piedmont are moderately dissected by drainages resulting in topographically distinct landforms. In contrast, lower piedmont fan surfaces are less dissected by streams, and different aged deposits merge into one relatively smooth basin floor. The distribution of alluvial deposits in the Study Area is similar to that found throughout the Phoenix Basin: late Tertiary and early to middle Quaternary fan deposits (Qo) are located close to the mountain front whereas late Quaternary deposits are pervasive in the lower piedmont areas (Q) (**Table 3.4-1**). The oldest piedmont deposits tend to be river terraces found along the larger rivers (e.g., Salt, Agua Fria, and Hassayampa rivers) that are older than 1 million years. Younger landforms tend to be alluvial fans derived partly from degrading older fans in the upper piedmont. Throughout the Quaternary, the piedmonts have experienced overall degradation with episodic periods of aggradation or stability (AZGS 1994).

Table 3.4-1 Study Area Geologic Unit Symbol, Description, and Age

UNIT SYMBOL	UNIT DESCRIPTION	UNIT AGE
Q	Surficial deposits	Holocene to middle Pleistocene
Qo	Older surficial deposits	Middle Pleistocene to latest Pliocene
Tsy	Sedimentary rocks	Pliocene to middle Miocene
Tb	Basaltic rocks	Late to middle Miocene
Tsm	Sedimentary rocks	Middle Miocene to Oligocene
Tv	Volcanic rocks	Middle Miocene to Oligocene
Xms	Metamorphic rocks	Early Proterozoic
Xmv	Metavolcanics	Early Proterozoic
Xg	Granitoid rocks	Early Proterozoic

Near Morristown and southward is an area where basin deposits are highly dissected by tributary streams to the Hassayampa River. These are erosional landforms where overlying Quaternary deposits have been eroded exposing older sediments. These surface sedimentary rocks (Tsy) are composed of late Tertiary sediment. Stream cuts expose moderately sorted sands, gravels, cobbles, and boulders with gently dipping beds. These deposits are commonly cemented with calcium carbonate; some calcareous horizons are greater than 5 meters thick. These sediments were deposited after the waning stages of Basin and Range faulting (AZGS 1988a; AZGS 1988b).

The Middle Tertiary volcanic sequence includes basaltic or andesitic flows basaltic rocks (Tb), rhyolite, and tuff with interbedded sedimentary rocks (Tsm) derived from the sequence. Mafic flows occur near the base of the Tertiary section throughout the region (volcanic rocks) (Tv) (AZGS 1988a; AZGS 1988b). The basaltic to andesitic flows are depositionally overlain by a sequence of yellowish tuff and altered rhyolite. These rocks are slope forming

and probably correlative with the San Domingo rhyolite of the Vulture and Wickenburg Mountains west of the Study Area.

The oldest rocks in the Study Area are Proterozoic metaigneous and metasedimentary rocks that form outcrops above the extensive basin fill largely in the southern Hieroglyphic Mountains. These are as follows:

- Schist and phyllite derived from sedimentary rocks (Xms)
- Amphibolite derived from mafic igneous rocks (Xmv)
- Variably foliated granite and granodiorite (Xg) (AZGS 1988a; AZGS 1988b)

3.4.3 Geological Hazards

Geologic hazards in the Study Area are subsidence and related earth fissures, seismic events, and mass movements.

3.4.3.1 Subsidence and Earth Fissures

Subsidence

Subsidence is the settling of the ground surface due to compaction (consolidation) of underlying unconsolidated (loosely packed) sediments. Subsidence is most common in uncompacted soil, thick unconsolidated alluvial material, and improperly constructed artificial fill. Subsidence due to groundwater withdrawal is possible, particularly in the southeast portion of the Study Area, due to substantial pumping in the Phoenix Basin. Major cones of depression have developed where groundwater levels have declined more than 300 feet between LAFB and the White Tank Mountains. Continued and/or increased groundwater withdrawal or dewatering may cause an overdraft condition (where groundwater removal exceeds recharge), resulting in subsidence. If that occurs, signs of subsidence could be observed. Groundwater levels at most of the index wells in the Study Area show slightly increasing or decreasing trends. The increase or decrease in water level over time at these wells is 15 feet or less. Many years or decades may be needed for the effects of excessive removal of groundwater to be manifested.

Subsidence and earth fissures are geological events that are accelerated by long-term extraction of groundwater, and they represent a disruption of a natural equilibrium. The water table in various areas of the state has dropped significantly. South-central Arizona is the main area of the state affected by subsidence. The geological conditions of the area are such that an over pumping of the underlying stores of water can result in the settling of the land or subsidence. Subsidence occurs gradually and spreads over wide areas. Subsidence is more likely to be a problem in areas underlain by clay-bearing layers and where the water table has decreased 100 feet or more. Subsidence also results from oil and gas withdrawal, the removal of rock during underground mining operations, and the drainage of marshlands (Gelt 1992; AZGS 2007; AZGS 2011a; AZGS 2011b). The Environmental Resource Report for Water Resources (URS 2012c) does not indicate the water table has dropped 100 feet or more in the Study Area.

A related phenomenon, earth fissures are the most visible manifestation of land subsidence. They can then grow considerably by water erosion. Gullies or trenches may be up to 50 feet

deep and 10 feet wide, with the fissure extending hundreds of feet below the surface. The fissure may range in length from a few hundred feet to over 8 miles. The average length of a fissure is measured in hundreds of feet (Gelt 1992).

Fissures develop because of differential subsidence or compaction. How the land settles depends upon characteristics of the underlying basin. The bedrock may include various irregularities such as ridges, hills, or fault scarps that are completely covered by alluvial fill of sand, gravel, and clay. The compaction of the alluvial fill over such bedrock features may be uneven and result in fissuring, especially if the bedrock is less than 300 meters below the surface. Fissuring may result from other conditions as well. A variation in the type and thickness of the alluvium might explain the occurrence of fissuring. These alluvium characteristics may vary within a basin. Variations in water-level decline can also influence fissuring. Once fissuring begins in an area the process tends to continue, increasing in number and length, with fissures forming adjacent and parallel to older fissures. Fissures spread at uneven rates and in various directions, sometimes forming complex patterns of multiple fissuring extending for miles (Gelt 1992).

Areas in Arizona affected by subsidence include the northwestern Avra Valley near Red Rock; the Harquahala Plains; areas northwest and southeast of Willcox; the Bowie and San Simon areas; a location near Tonopah in the lower Hassayampa area; and the Gila Bend basin. Most fissures are found in the counties of Pinal and Maricopa. (Gelt 1992; AZGS 2011b). Those areas affected closest to the Study Area are near Tonopah and on the Harquahala Plains.

Fault Rupture

A factor considered in the seismic (earthquake) design of Project structures is the location of active faults that may cross a transmission line route or affect a substation or other structures. Central Arizona is in a low to moderate earthquake hazard setting (Arrowsmith 1997). There are two faults in the northwestern portion of the Study Area, along the Proposed Action route, but these are mid-Tertiary features which have not been active in the Quaternary (Arrowsmith 1997). These are older Basin and Range detachment faults. Polished slip planes resulting from Basin and Range detachment faulting of mid-Tertiary volcaniclastics are well exposed at Lake Pleasant northeast of the Study Area. Middle Tertiary normal faulting and tilting has widely affected rocks of the area. The Tertiary volcanic belt has been tilted and the volcanic section is cut by several low- and high-angle angle normal faults (AZGS 2002; AZGS 1998a). The closest active fault to the Study Area is the Cave Creek Fault, approximately 10 miles east of the northeastern portion of the Study Area. It is 7 miles long, exposed, and shows middle and late Quaternary activity (Arrowsmith 1997). Further to the northeast, approximately 20 miles away, the Horseshoe Fault zone is as much as 12.5 miles long and the Horseshoe Reservoir section apparently shows Holocene activity. None of the faults have slip rates > 0.2 millimeters per year (AZGS 1998a).

No earthquake in recorded history has caused deaths or injuries in Arizona. In the past century or more, 14 tremors of intensity V to VII have centered within its borders. All of these shocks; however, were moderate in intensity, with one VII, one VI-VII, four VI, and eight V intensity events. The largest historic earthquake felt in Phoenix was the 1887

Pitaycachi event in northern Sonora. Between 1906 and 1912, three VI events occurred in the Flagstaff area that were felt in Phoenix (U.S. Geological Survey [USGS] 1970).

Ground Shaking

The intensity of the seismic shaking (strong ground motion) during an earthquake in the Study Area would depend on the distance between the area and the earthquake's epicenter (point at the earth's surface directly above the initial movement of the fault at depth), the magnitude (seismic energy released) of the earthquake, and the geologic conditions underlying and surrounding the Study Area. Earthquakes occurring on faults closest to the Study Area would most likely generate the largest ground motion.

Liquefaction

Liquefaction occurs primarily in saturated, loose, fine- to medium-grained soils in areas where the groundwater table is within approximately 50 feet of the ground surface. Shaking causes the soils to lose strength (that is, lose their ability to stick together) and behave as a liquid. Liquefaction, which can include lateral spreading, subsidence, buoyancy effects, and loss of bearing strength (the ability to support a load such as a building foundation), is caused when these sediments temporarily lose their shear strength during strong ground shaking. Susceptibility to liquefaction is a function of the sediment density, water content, depth, and peak ground acceleration. Over the entire Study Area, liquefaction would be very unlikely due to groundwater depth (ranging from 150 feet below the surface in the Hieroglyphic Mountains to 660 feet in the West Salt River Valley). Geologic material in the Study Area includes substantial clay- and silt-rich units and areas with a high percentage of coarse sedimentary particles such as gravel, cobbles, and boulders (intermediate and older alluvial fans), and some units with calcium carbonate cementation (some intermediate and older alluvial fans). These materials are more prone to liquefaction but given the groundwater depth, as previously mentioned, the risk is very low.

Mass Movements

Landslides, rockfalls, and debris flows occur continuously on all slopes; some processes act very slowly, while others occur very suddenly, with potentially disastrous results. Rockfalls and debris flows are examples of earth movements that occur rapidly, often without warning. Landslides can occur rapidly without warning but often provide signs of movement before the slide occurs. Such movements can have damaging effects. Most of the Study Area is in low to moderately sloping topography containing sandy and gravelly alluvium that is not susceptible to landslide effects. No landslides have been designated on maps reviewed for the Study Area; however, minimal rockfall hazards may exist in the southern Hieroglyphic Mountains near the northeastern terminus of the Proposed Action route and could include blocks from a few feet to over 10 feet in diameter (AZGS 2002).

3.4.4 Mineral Resources

Mineral resources are defined by the USGS as a concentration of naturally occurring minerals in or on the Earth's crust in such form and amount that economic extraction of a commodity from the concentration is currently or potentially feasible (USGS 2012). Mineral resources that occur within and adjacent to the Study Area consist primarily of sand and gravel, decorative stone, sodium, gold, oil, gas, and geothermal. BLM administers programs

that allow production of three types of minerals and energy resources on public lands. These mineral assets fit into categories of saleable, locatable, and leasable minerals and are administered under different laws and regulations. Saleable minerals include sand, gravel, and other common variety minerals. These minerals are disposed of under the Mineral Materials Act of 1955 as amended, and related acts, through competitive or negotiated sales, establishment of Community Pits for local public use, or through establishment of Free Use Permits for government entities. Locatable minerals consist of precious metals such as gold and silver, as well as metals such as copper and iron, and some industrial minerals such as gypsum and clays with special properties. These minerals are managed by BLM primarily under the Mining Law of 1872 as amended (BLM 2008a). Rights to explore for and produce these locatable minerals are established by the staking, filing, and maintenance of mining claims. There are two types of mining claims; lode and placer. Lode claims are used for mineral deposits that occur in veins having well defined boundaries as well as for deposits of valuable minerals contained within in-place rock. Placer claims are used for minerals that are contained in unconsolidated layered or bedded deposits, such as sand and gravel (BLM 2011b). Oil, gas, geothermal, sodium, and certain other substances are managed as leasable minerals under the Mineral Leasing Act of 1920, as amended. Rights to explore for, develop, and produce these minerals are obtained through the issuance of a mineral lease by BLM, either non-competitively or competitively (BLM 2008a). Active mining claims, and authorized mineral leases or permits for mineral materials establish valid existing rights for access to the claim, lease or permitted area and to explore for, develop, and mine the applicable mineral commodity.

Management decisions for land use allocations documented in the Bradshaw-Harquahala ROD and approved RMP identify areas where mineral leasing, mineral material disposal actions, and locatable mineral activities are precluded on BLM-managed lands (BLM 2010a). These areas, identified as "Mineral Restrictions" on **Figure 3.4-2**, include existing segregations, administrative withdrawals, and legislatively withdrawn areas within and adjacent to the Study Area.

Publically available literature, maps, and online sources were used to evaluate the potential for the occurrence of mineral resources in the Study Area. Potential sand and gravel deposits occur along the north-south flowing Agua Fria and Hassayampa River drainages on the east and west margins of the Study Area, respectively. In addition a small north-south trending drainage approximately 3 miles east of Morristown in the north central portion of the Study Area has potential for the occurrence of sand and gravel deposits. This deposit also likely underlies all Action Alternative routes in a narrow north-south band in that area (BLM 2008a). A search of the BLM Land and Mineral Legacy Rehost 2000 System (LR2000) records shows no active sand and gravel or other saleable mineral sites on BLM-managed lands or mineral estate in the Study Area (BLM 2012a). The LR2000 records show one closed negotiated sale site for rhyolite decorative stone in Township 6 North, Range 2 West, Section 31, where 1,233 tons of rhyolite were removed from 640 acres (BLM 2012b). The records also show one closed Community Pit for sand and gravel, known as the Padelford Pit, covering 1,050 acres and located in Township 6 North, Range 1 West, Section 30 and Township 6 North, Range 2 West, Section 25 (BLM 2012a). No active sand and gravel or other mineral material sites are known to exist on other land ownerships within the proposed ROWs for any of the Action Alternative routes.

The potential for locatable mineral deposits is moderate over a large portion of about the eastern third of the Study Area as well as in the northwest corner of the Study Area, but the remainder of the Study Area has low potential for locatable minerals (BLM 2008a). All or portions of seven metallic mining districts are located within the Study Area (**Figure 3.4-3**). Only one metallic mineral district occurs within the proposed ROWs for the Action Alternative routes and it is located in Township 6 North, Range 1 West, Sections 30 and 31. LR2000 records show there are 88 active lode and 26 active placer mining claims within the Study Area (BLM 2012c). Portions or all of three active lode mining claims located in Township 6 North, Range 2 West, Section 25, occur within the Proposed Action route ROW. In addition, portions or all 12 active lode mining claims located in Township 6 North, Range 1 West, Sections 30 and 31, and in Township 6 North, Range 2 West, Section 25 occur within the Alternative 1 ROW. However, records show that no Notices or Plans of Operations to conduct exploration operations are currently approved or pending action by BLM for these claims. Exploration activity is planned or occurring on some claims in the northwestern portion of the Study Area as two Notice Level operation permits (for less than five acres of disturbance) have been approved by the HFO in Township 6 North, Range 4 West, Section 22 and one Plan of Operations (for more than five acres of disturbance) in Township 6 North, Range 5 West, Section 25 is pending review by the HFO (BLM 2012d).

The USGS Mineral Resource Data System (USGS 2011) indicates that there are 20 metallic mine sites and 10 non-metallic mine sites within the Study Area. However, no mining of metallic deposits have been identified within or adjacent to the proposed ROWs and for general reference, none closer than 1000 feet. There are also three mining districts just outside the Study Area: the Agua Fria Mining District southeast of Lake Pleasant, the Pikes Peak (Morgan City) District in the Hieroglyphic Mountains, and the San Domingo District southeast of Wickenburg (ABM 1961). With regard to leasable mineral potential, the Phoenix Basin in general has low to moderate geothermal, oil and gas, and sodium potential. While the Study Area is considered to have low potential for all of these leasable mineral resources, areas of moderate potential have been identified just south, southwest, and west of the Study Area. The northern boundary of an area of geothermal potential is located starting approximately three miles south of the Study Area and just east of the White Tank Mountains Regional Park. Starting approximately six miles south of the southern Study Area boundary, the northern boundaries of overlapping areas of potential for sodium and oil and gas occur, which also overlap with the area for geothermal potential. Approximately seven miles to the southwest of the Study Area, there are overlapping areas of potential for sodium and geothermal resources and approximately two miles to the west, an area of potential for geothermal resources occurs (BLM 2008a). The Luke-Litchfield area near Sun City has been identified as a potential geothermal resource (AZGS 1979).

3.5 HAZARDOUS MATERIALS AND HAZARDOUS AND SOLID WASTE

The information provided in the following subsections is taken from a report titled: *Environmental Resource Report for Hazardous Materials and Hazardous and Solid Waste, Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012d). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review.

The Study Area for the hazardous materials (hazmat) survey includes the lands within and adjacent to the Proposed Action route, the ACC-certificated route, and the other Action Alternatives. The Study Area is described in detail in the Project Area Conditions section. The hazmat survey was performed to evaluate potential hazardous materials impacts from utilization of properties included in the Study Area. The purpose of the survey was to: (1) perform a screening-level assessment of the Study Area, (2) identify potential environmental concerns associated with individual properties within and adjacent to the Study Area, and (3) identify those properties requiring more detailed investigation. In addition, reviews were made of ADEQ, U.S. Department of Transportation (DOT), and EPA online databases for an approximate five-mile area surrounding the Study Area, as shown on **Figure 3.5-1**.

The hazmat survey included a limited visual reconnaissance of the Study Area to identify areas or properties of potential environmental concern with respect to hazardous materials and to aid in assessing sites identified from a review of regulatory agency databases. This utilized a four-wheel drive vehicle to traverse existing roads within the Study Area. Private properties were not accessed during the visual reconnaissance.

The hazmat survey was not intended to be a definitive investigation of possible contamination within the Study Area. The purpose and scope of the investigation was to determine if there is reason to suspect the possibility of contamination within the Study Area. The hazmat survey is not a Phase I Environmental Site Assessment, a regulatory compliance audit, or an evaluation of the efficiency of the use of any hazardous materials within the Study Area. No exploratory borings, soil or groundwater sampling, or laboratory analyses were performed within the Study Area and, therefore, the conclusions set forth herein are made without the benefit of such investigation. Given that the hazmat survey scope of services was limited, it is possible that currently unrecognized contamination may exist within the Study Area.

Certain chemicals and materials that would be used during the construction and operation of the Project are characterized as hazardous materials. In addition, transmission line construction and operation activities would generate certain hazardous and nonhazardous solid waste streams. This section discusses the following:

- Federal, state, and local laws, ordinances, regulations, and standards that would govern the management of hazardous materials and hazardous and nonhazardous waste generated from the Project;
- Existing conditions in the Study Area relevant to hazardous materials and hazardous and nonhazardous waste; and,
- Locations for disposal of hazardous materials and hazardous and solid waste.

3.5.1 Laws, Ordinances, Regulations, and Standards

Hazardous waste is defined by the Resource Conservation and Recovery Act (RCRA) and includes lists of specific wastes, as well as waste that exhibits a specific characteristic (e.g., it is ignitable, corrosive, reactive, or toxic in accordance with RCRA-specific definitions). Hazardous wastes and substances are defined herein as wastes or substances from production or operation activities that pose a substantial present or potential hazard to human health and

the environment if improperly treated, stored, or disposed. The EPA uses the term "hazardous substance" for chemicals that, if released into the environment above a certain amount, must be reported. Depending on the threat to the environment, federal involvement in handling the incident can be authorized under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The ADEQ implements RCRA as it has been granted primacy by the EPA for the program. Relevant laws and regulations that apply to this Project include the following.

- NEPA of 1969, as amended
- CERCLA of 1980, as amended
- RCRA of 1986
- BLM Hazardous Materials Program and Policy

3.5.2 Study Area Conditions

Several small areas of illegal dumping (primarily furniture and other house-hold items) and wind-blown trash were observed in the vicinity of the Proposed Action route. No chemical containers, potential asbestos-containing materials, or other regulated materials were observed in the area. In addition, no staining or unusual odors were noted in the dumped material. Therefore, illegal dumping was not considered a significant environmental concern for the Study Area.

No commercial or residential development was observed within the Alternative 1 or 2 areas.

The Cow Town Paintball facility was observed on Old Carefree Highway on or adjacent to Alternative 3. Structures and areas of debris, including 55-gallon drums, were observed on this property. The Raceway Substation was observed on or adjacent to Alternative 3. Canyon Motocross race track and recreational vehicle park and a small air park were observed southeast of Alternative 3.

Areas of residential development exist on the private land to the south of the Cloud Road alignment, but there has been no development of the State Trust lands north of the Cloud Road alignment or west of 211th Avenue. Investigation of aerial photographs indicates the presence of a livestock corral along North English Wells Road northwest of the intersection of 211th Avenue and Cloud Road. Livestock corral operations can involve use of pesticides and fuels, but it is uncertain if these materials were used at the corral. It is unlikely that the sub-alternative would affect this corral area.

The online database search resulted in a reported Underground Storage Tank (UST)/LUST site along 211th Avenue between the Cloud Road and Joy Ranch Road alignments (**Figure 3.5-1**). This is attributed to the ADEQ Facility ID#0-000584 and LUST ID#4109.01. It is a LUST reported in 1995 and the case was closed in 1996 with soils reportedly meeting Tier 1 cleanup levels. Groundwater was reportedly not affected. It is unlikely that this site would be affected by the sub-alternative.

As indicated for the description of the Proposed Action, other than several small areas of illegal solid waste dumping and wind-blown trash in the vicinity of the Proposed Action route, no chemical containers, potential asbestos-containing materials, or other regulated materials were observed in the area of the Primary Segment.

3.5.2.1 Hazardous Materials Sites

The locations of the sites summarized below are indicated on **Figure 3.5-1**. Although no hazardous materials sites were identified within the Study Area, the following was identified adjacent to the Study Area:

- According to ADEQ, a remediation area is located adjacent to the Proposed Action route and ACC-certificated route within Township 6 North, Range 2 West, Section 26. This site is located within land owned by the ASLD and was specifically located along the north side of SR 74 at approximately milepost 11. According to Mr. Bruce Campbell (ASLD), sixteen 5-gallon and five 1- and 2-gallon containers of used oil were removed from this area in August 2003. At that time, one 55-gallon drum of oil-impacted soil was also removed. The removal activities were conducted under the direction of ASLD and the site is considered closed. No evidence of this site was observed during the site reconnaissance. Based on this information, this site does not represent a significant environmental concern to the Study Area.

In addition, the following ADEQ-permitted facilities were identified within or adjacent to the Proposed Action route or the other Action Alternative routes:

- A firearms range located at 10402 West Carefree Highway, Township 5 North, Range 1 East, Section 5, on or adjacent to Alternative 3. This area was observed to be the Cow Town Paintball facility during the visual reconnaissance. Because this site is located on private land, it was observed from the site boundary. Areas of debris, including 55-gallon drums, were observed on this facility.
- The Vistancia subdivision located within Township 5 North, Range 1 West, Section 3, on or adjacent to Alternative 3. This area was not accessible during the site reconnaissance; however, based on a review of the Maricopa County Assessor's online aerial photographs, this area appears to be undeveloped land.
- Natural gas pipelines cross the eastern portion of the Study Area in the vicinity of the Morgan Substation and in the mid-section of the Study Area at the intersection of the Proposed Action route and US 60. These pipelines are owned and/or operated by Transwestern Pipeline Company, El Paso Natural Gas Company, and Southwest Gas Company. Although no information reviewed indicates that these pipelines represent a significant environmental concern to the Study Area, their exact locations should be verified before any construction activities are conducted.

In addition to the Study Area, the ADEQ and EPA online databases were examined for an approximate 5-mile area surrounding the Study Area. Facilities identified within this broader area included the following:

- Registered USTs were identified within the following areas: Township 4 North, Range 4 West, Section 25; Township 5 North, Range 2 West, Sections 8 and 33;

Township 5 North, Range 3 West, Section 13; Section 5 North, Range 4 West, Section 35; Township 6 North Range 1 East, Section 17; Township 6 North, Range 2 West, Section 31; Township 6 North, Range 3 West, Sections 29 and 33; and Township 6 North, Range 4 West, Section 13. Although registered USTs were not identified in Township 5 North, Range 2 West, Section 19, an active truck stop/gasoline station was identified in this area. LUST site incidents were identified at several of these locations. However, based on reviewed information, none of the UST/LUST sites are located within or immediately adjacent to the Study Area. Therefore, these USTs and LUSTs do not represent a significant environmental concern to the Study Area.

- Hazardous materials incidents and/or remediation projects were identified within the following areas: Township 5 North, Range 2 East, Section 7; Township 5 North, Range 1 West, Section 10; and Township 5 North, Range 5 West, Section 13. Based on limited information reviewed, these incidents and/or remediation projects do not represent a significant environmental concern to the Study Area.
- A closed solid waste landfill was identified within Township 6 North, Range 3 West, Section 19. Based on reviewed information, this closed landfill is located approximately 0.5-mile from the boundaries of the Study Area. Therefore, this landfill likely does not represent a significant environmental concern to the Study Area.
- Permitted facilities and/or projects identified included wastewater treatment plants, water reclamation facilities, wastewater reuse projects, subdivisions, schools, parks, residences, undeveloped lots, medical facilities, recreational vehicle and trailer parks, resorts, golf courses, a race and test track, construction projects, sand and gravel pits, a quarry, a rock crushing facility, a bank stabilization project, waste transfer and tire collection stations, siphons, and dams.

LAFB Auxiliary Field #1 (a.k.a. Wittmann Field) is located within the Study Area and the 5-mile records review area within Township 4 North, Range 2 West, Section 7, and Township 4 North, Range 3 West, Sections 1, 2 and 12. In addition, the accident potential zone extends from this area to the northwest and terminates within the Proposed Action route in Township 5 North, Range 4 West, Sections 13 and 14. According to the U.S. Air Force LAFB fact sheet, Auxiliary Field #1 is no longer used for landings, but is currently used for instrument approach procedures. LAFB Auxiliary Field #4 (a.k.a. Wickenburg Field) is located within the 5-mile records review area within Township 5 North, Range 4 West, Sections 25 and 26. No structures were observed in this area during the visual reconnaissance and this air field is listed as closed.

3.5.2.2 Hazardous Waste Disposal Sites

Wastes generated during the construction and operation of the Project would be accumulated and contained on-site, in accordance with applicable state and federal requirements. The types of wastes that would be generated are disclosed in detail in **Section 4.5**, **Chapter 4**. Under suitable manifest, such materials would be taken off-site by a licensed shipper to an existing, permitted treatment, storage, or disposal facility. Construction solid wastes are

currently handled at the: City of Phoenix 7th Avenue Landfill and Transfer Station, Phoenix, AZ; Butterfield Station Landfill, Mobile, AZ; White Tanks Transfer Station, Buckeye, AZ; and Belmont Waste Disposal site, Buckeye, AZ. Hazardous wastes are currently managed at the Clean Harbors Arizona site in Phoenix. Sufficient capacity is present at these local, commercial waste management facilities so that the additional waste materials generated by the Project could be accommodated.

The Butterfield Station Landfill is a very large facility that historically accepts much of the industry-generated, nonhazardous wastes for the Phoenix metropolitan area. Clean Harbors Arizona operates a large hazardous waste treatment and disposal facility in west Phoenix that could accept the hazardous waste generated at the Project.

Transportation of wastes from the Project Area would use existing roadway routes that are suitable for waste transport.

3.6 LAND USE AND RANGE RESOURCES

3.6.1 Land Use and Range Resources

The information provided in the following subsections is taken from a report titled *Environmental Resource Report for Land Use, Recreation, and Special Designations, Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012a). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review.

This section provides information on land use and range resources as they relate to the Project. The Study Area boundary for this analysis includes a 2-mile area surrounding the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes (**Figure 3.6-1**).

Although direct effects related to construction would likely occur within 500 feet of the routes, a broader area (out to two miles from the routes) was chosen to be consistent with what was considered in the CEC application. The following subsections discuss relevant laws and regulations, jurisdictional boundaries, and land use within the Study Area and surrounding vicinity.

3.6.2 Laws, Ordinances, Regulations and Standards

The Action Alternatives would traverse federal, state, and local agency jurisdictions that have adopted land use plans and regulations which guide the type and intensity of land use (**Figures 3.6-1** and **3.6-2**, **Table 3.6-1**). To determine whether the Proposed Action route and other Action Alternative routes are consistent with these government plans and policies, a thorough review of all applicable policies was conducted. The following discussion summarizes the relevant land use regulations, plans, and policies that would apply to land use and range resources. Because of the nature of these regulations, plans and policies, this discussion also covers those that would apply to recreation and special designations, which is addressed in **Section 3.9**.

3.6.2.1 Federal

FLPMA of 1976, as amended - FLPMA and the regulations contained in 43 CFR Part 1600 govern the BLM planning process. Land Use Plans ensure that public lands are managed in accordance with the intent of Congress as stated in FLPMA, under the principles of multiple use and sustained yield. "Multiple use" is a concept that directs management of public lands and their resource values in a way that best meets the present and future needs of Americans, defined as a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources (FLMPA, 1976 as amended). As required by FLPMA, public lands must be managed in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values and that will provide for outdoor recreation and human occupancy and use by encouraging collaboration and public participation throughout the planning process. The FLPMA also requires the utilization of ROWs in common to the extent practical, reserving the right to the Secretary to grant additional ROWs or permits for compatible uses.

Taylor Grazing Act of 1934, as amended and supplemented - The Taylor Grazing Act provided parameters for livestock grazing in the form of grazing allotments, regulation of number and type of livestock (i.e., cattle, sheep, and horses), and season of use. Grazing permits are required for livestock use on public lands. Section 3 of the Taylor Grazing Act concerns grazing permits issued on public lands within grazing districts established under the Act. It gave leasing preference to landowners and homesteaders in or adjacent to the grazing district lands. Permits are generally in place for 10 years and outline terms and conditions for annual grazing utilization (BLM 2010b).

FAA Regulations - FAA regulations address potential aircraft obstruction for structures taller than 200 feet or within 20,000 feet of an airport. Specifically, Federal Regulation Title 14, Part 77, established standards and notification requirements for objects that have the potential to affect navigable airspace. In 1993, Part 77.13(a)(5)(ii) was revised to include only those airports under construction and excluded proposed airports (FAA 1993).

Nonetheless, the Part 77 standards are intended to (1) evaluate the effect of the construction or alteration of structures on airport operating procedures; (2) determine if there is a potential hazard to air navigation; and (3) identify measures to enhance safety. Specifically, the FAA requires notification through the filing of FAA Form 7460, Notice of Proposed Construction or Alteration, if a structure is over 200 feet in height or closer than 20,000 feet to an existing airport or airport under construction (Title 23 14, Part 77.13).

The Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195) - This Act requires the protection, management, and control of wild free-roaming horses and burros on public lands. The policy states that wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this they are to be considered in the area where presently found, as an integral part of the natural system of the public lands.

3.6.3 Land Ownership, Planning, and Management

Existing land ownership within and adjacent to the Study Area is characterized by a mix of public and private land holdings (**Figure 3.6-2**). Lands within the Study Area include lands administered by the Department of Defense (LAFB), BLM, and the USBR; State Trust lands administered by the ASLD; land owned and administered by Maricopa County; and lands that are privately held. BLM administers large areas of land to the west of Lake Pleasant Regional Park, north of SR 74, and a small area south of SR 74. The BLM also administers several small and isolated parcels along the CAP canal, the Agua Fria River, and in the northwest portion of the Study Area along the Hassayampa River. The USBR primarily manages the lands along the CAP canal and within or adjacent to Lake Pleasant Regional Park.

Table 3.6-1 presents the number of surface acres for each of these management categories out to two miles from the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes. Agencies with federal jurisdiction include the BLM, USBR, and the Department of Defense. State jurisdiction includes the ASLD. Maricopa County manages parks, open spaces, and undeveloped lands within the Study Area. Privately owned land includes undeveloped, residential, commercial, and industrial areas.

Table 3.6-1 Surface Management and Ownership within the Study Area

SURFACE MANAGEMENT	TOTAL ACRES	PERCENTAGE OF TOTAL (%)
Federal	17,510	14
State	54,163	43
Private	53,765	43
County	485	<0.1
Total	125,923	100

3.6.3.1 Federal Plans

BLM Bradshaw-Harquahala Resource Management Plan

The BLM HFO manages approximately 1 million acres of land within Maricopa and Yavapai counties. This includes land north of Interstate 10, and an additional 725,000 acres of subsurface mineral estate, including the Agua Fria National Monument. Public lands within the HFO jurisdiction are located near developed and expanding communities and are heavily used. The lands are managed for multiple uses including recreation, mining, wildlife habitat, livestock grazing, and wilderness. The field office also manages five wilderness areas, one river segment suitable for Wild and Scenic River designation, and one Area of Critical Environmental Concern (ACEC) (see **Section 3.9**).

The HFO also manages public lands within the Bradshaw-Harquahala Planning Area as presented in the Bradshaw-Harquahala RMP. The Bradshaw-Harquahala planning area is bound on the southeast by the Phoenix metropolitan area. Moving north, the RMP's boundary follows Interstate 17 to Cordes Junction, then turns northwest toward Prescott and extends west to encompass portions of the Harcuvar and Harquahala mountain ranges (BLM 2010a). The southern boundary follows Interstate 10 between the Harquahala Valley and Phoenix. Major communities within the RMP's planning boundaries include Peoria, Anthem, New River, Black Canyon City, Prescott, Wickenburg, and Buckeye.

The Bradshaw-Harquahala Planning Area includes remote, undeveloped areas, as well as wildland-urban interface zones. It encompasses mountain ranges and deserts of the Basin and Range physiographic province in the Sonoran Desert, as well as transitional and chaparral zones at higher elevations (BLM 2010a). The area features diverse land uses including mining, livestock grazing, recreation, major transportation routes, utility corridors, communication sites and wilderness areas (BLM 2010a).

The following Bradshaw-Harquahala RMP utility and transportation corridor management decisions would apply to the Study Area and are summarized from the RMP below.

- LR-2 - Utility corridors are designated to meet future expected demands for energy, natural gas, water, and transmission facilities. These corridors are shown on Map 9, Utility & Transportation Corridors and Communication Sites, of the Bradshaw-Harquahala RMP. These designations conform to the utility regulations of the ACC and are consistent with the Approved Resource Management Plan Amendments and Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States (BLM 2009a). Facilities significant enough to be the basis for corridor designation are natural gas and other pipelines at least 10 inches in diameter, electric transmission facilities accommodating 115 kV lines or greater voltage, and significant canals delivering water to urban areas.
- LR-15 - All major utilities should be routed through designated corridors and new ROWs within designated corridors will be encouraged to promote the maximum use of existing routes. Joint use will be encouraged whenever possible.
- LR-16 - Co-locate smaller utility lines needed for local service near corridors or within a corridor unless doing so would limit the opportunity to co-locate other major utility lines in the corridor.
- LR-18 - Whenever possible, design or route utility transmission lines to minimize adverse visual impacts to the surrounding lands and vistas.

Central Arizona Project

The CAP, owned and constructed by the USBR, is a 336-mile long system of aqueducts, tunnels, pumping plants, and pipelines that carry water across Arizona from Lake Havasu to southwest of Tucson. Designed to bring 1.5 million acre-feet of Colorado River water per year to Pima, Pinal, and Maricopa Counties, the CAP is the largest single renewable water resource in the state. While the CAP is federally owned and occupies USBR lands within the Study Area, it is managed by the CAWCD.

3.6.3.2 State Plans

Arizona Corporation Commission

The ACC has jurisdiction over the construction, maintenance, and operation of public utilities in the State of Arizona. The ACC has issued a CEC as part of its evaluation of the Project.

In addition, the ACC Biennial Transmission Assessment process requires transmission providers to file a 10-Year Plan every January 31 with the ACC. Biennially, the ACC assesses the 10-Year Plans to determine the adequacy of the existing and planned facilities in the state to reliably meet the present and future energy needs of the state. The analysis is guided by Arizona best engineering practices coupled with the use of regional and national reliability council criteria and standards. The Sun Valley to Morgan Project has been included in APS' 10-Year Plan filings and has been found to be beneficial to the reliability needs of the Project Area (R. Stuhan, personal communication, February 2013).

Arizona State Land Department

The ASLD manages 9.28 million surface acres and 9 million subsurface acres of State Trust lands in Arizona. State Trust lands are diverse in character, ranging from Sonoran Desert lands, desert grasslands, and riparian areas in the southern half of the state, to the mountains, forests, and Colorado Plateau regions of northern Arizona. The majority of the State Trust lands are located in rural areas of the state with more than one million acres located within or adjacent to urbanized areas (ASLD 2011a). State Trust lands constitute approximately 13 percent of land ownership in Arizona. Parcels of State Trust land are dispersed throughout the Study Area, totaling 54,163 acres.

ROWs are granted across State Trust lands for a variety of uses, such as access roads, infrastructure, power lines, communication lines, and public roadways. ROWs are granted for periods of one year to perpetuity. The period of time approved for a ROW grant is determined by analyzing the proposed use, local jurisdictional permit approvals, and its compatibility with the existing and/or anticipated use of adjacent State Trust land. The ASLD will review the application to evaluate the necessity for the ROW and the suitability of the proposed use and alignment. If considered acceptable, the application is processed. The ASLD would then complete a field inspection of the proposed alignment and a determination of a ROW grant would then be made.

Central Arizona Water Conservation District

In 1971, the CAWCD was created to not only provide a means for Arizona to repay the federal government for the reimbursable costs of construction, but to also assume the responsibility for the care, operation, maintenance, and management of the system.

The CAWCD Land Department is responsible for managing all land associated with the CAP for the benefit of CAWCD and its water customers. Water delivery is CAWCD's primary mission; therefore all proposed uses of CAP land (utility crossings, roadways, communication sites, etc.) are evaluated to determine the overall effect on the CAP.

3.6.3.3 Local Plans

Maricopa County Comprehensive Plan

Maricopa County has comprehensive planning and zoning authority for over 3,000 square miles of land. The Comprehensive General Plan establishes goals and policies for the management of county resources. The goals and policies of the Land Use Element of Maricopa County's Comprehensive Plan is to promote efficient land development that is compatible with adjacent land uses, is well integrated with the transportation system, and is sensitive to the natural environment (Maricopa County 2002). The following policies would be applicable to the Proposed Action route, and all other Action Alternative routes.

- Policy L11.3 - Encourage protection of ridgelines, foothills, significant mountainous areas, wildlife habitat, native vegetation, and riparian areas.

Maricopa County Regional Trail Plan

The Maricopa County Regional Trail System Plan represents a comprehensive system of non-motorized trail corridors under the jurisdiction and control of many different agencies. The plan recognizes the importance of the Sun Circle Trail, establishes the Maricopa Trail, and identifies future trail corridors throughout the county (Maricopa County 2004). The plan creates a mandate which allows Maricopa County to meet four specific objectives outlined in the land use element of the Comprehensive Plan. These objectives include:

- Objective L7 - Ensure provision of adequate public facilities and promote an inter connected open space system.
- Objective L9 - Integrate transportation planning with land use.
- Objective L10 - Promote the balance of conservation and development.
- Objective L11 - Promote an interconnected open space system.

City of Surprise General Plan

The Surprise Planning Area is 309 square miles while the City's current incorporated land boundaries are approximately 93.76 square miles (City of Surprise 2008a). Land use designations in the planning area include residential, commercial, business/industrial, mixed use, activity centers, master planned communities, parks and open space, and public use categories. The majority of the land use in the planning area is low-density residential, suburban residential, and rural residential. The ASLD administers substantial holdings throughout the planning area within the city limits. Surprise land use patterns are implemented through more detailed village and city-specific plans, land use codes, and other regulatory measures. The following policies would be applicable to portions of the Proposed Action and Action Alternative routes that cross the Surprise Planning Area:

- Preserve the balance of land uses when making land use changes.
- Coordinate with private utility companies and other public services to plan infrastructure, facilities, and services in undeveloped parts of the Planning Area.
- Coordinate with other jurisdictions when utility corridors cross jurisdictional boundaries.

- Encourage utility providers to fully utilize existing corridors before planning alignments for new corridors.
- Planning and alignment selection for new corridors should be done in full cooperation between utility companies, local jurisdictions, and area stakeholders.
- Require various utility providers to share existing corridors before developing new corridors.

City of Peoria General Plan

The City of Peoria's General Plan (City of Peoria 2010) covers approximately 234 square miles of public, private, and State Trust lands. The Land Use Element of the Peoria General Plan describes how the City anticipates addressing future population and employment growth while promoting a development pattern that promotes a pedestrian-friendly environment; and integrates natural and manmade features in a manner consistent with the vision for the City of Peoria. The following policies would be applicable to portions of the Study Area that occur with the City of Peoria's jurisdiction:

- Policy 3.B.4: Promote the use of existing utility and major transportation corridors for new overhead utility siting to minimize visual and environmental impacts.

City of Peoria Parks, Recreation, Open Space, and Trails Master Plan (PROST)

The PROST provides a framework to identify, acquire, and enhance a system of open space areas, recreation facilities, and trails within the Peoria Planning Area. The system is intended to provide an appropriate level of open space and parks acreage. Connectivity and linkages necessary to serve existing and future residents of the City through the rivers and trails corridors, canals, utility corridors, and pathways provide both passive and active recreation areas allowing the use of alternative transportation modes that enhance social interaction (City of Peoria 2006). This plan also recognizes the value of regional destinations which create linkages with neighboring jurisdictions to support a seamless system of open spaces and recreation facilities.

Town of Buckeye General Plan

The Buckeye Planning Area encompasses approximately 600 square miles of land and is a mosaic of public, private, and federal land ownership as well as parcels of State Trust lands managed by ASLD. Land use designations in the Planning Area include residential, mixed use, commercial, industrial, agriculture, military, and open space. A majority of the land in the Planning Area is designated as low- to medium-density residential. The following policies would be applicable to portions of the Proposed Action and alternative routes in the Buckeye Planning Area (Town of Buckeye 2008):

- Encourage compatible, sustainable, and environmentally sensitive land uses.
- Discourage incompatible land uses or intensity of developments not in keeping with surrounding land uses.
- Provide proper planning of utility corridors in order to mitigate environmental impacts on sensitive landscapes and natural resources.

- Promote unique and specific land uses that can take advantage of the distinctive physical characteristics.

3.6.3.4 Future Planned Land Use

Future planned land uses in the Study Area include residential, mixed use, commercial development, parks and open space, and expanded transportation infrastructure (**Figure 3.6-2**). These future uses are defined under the general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008a; Town of Buckeye 2008; BLM 2010a).

Residential

Planned residential developments in the Town of Buckeye, unincorporated Maricopa County, and the cities of Surprise and Peoria that are located within two miles of the Proposed Action route, ACC-certificated route, and all other Action Alternative routes are listed in **Table 3.6-2**. The residential developments are planned in accordance with the governing entities where the development would occur, and are presently in various stages of planning.

Table 3.6-2 Planned Residential Developments within the Study Area

TOWN OF BUCKEYE	CITY OF SURPRISE
Douglas Ranch	Grand Vista
Festival by Lyle Anderson	Marisol Ranch
Sun Valley Villages I and II	
Spurlock Ranch	
UNINCORPORATED MARICOPA COUNTY	**CITY OF PEORIA**
Coyote Trails	Saddleback Heights
Asante West	Quintero
Broadstone Ranch	Vistancia
Warrick Properties	Cholla Hills
Roesner Ranch	Lake Pleasant Heights
Lake Pleasant	
Grande Oasis	
Peak View Estates Unit 2 and 3	
Trail of Light	
Walden Ranch	
Rancho Maria	
Rancho Cabrillo	

Source: Maricopa County 2012

Utilities

A 230kV transmission line is approved, but not yet constructed and will be situated east-west between the future Sun Valley Substation and the future Trilby Wash Substation, parallel to the existing east-west running 500kV transmission lines generally to the south of the Study Area.

APS has planned and completed the permitting for a new 500kV transmission line from the Palo Verde Generating Station area to the future Sun Valley Substation (through the future Delaney Substation), which provides one potential source of power that would be carried through the connection between the Sun Valley and Morgan substations (R. Stuhan, personal communication, February 2013).

Open Space

Future open space areas have been identified in the northeast and southwest portions of the Study Area. The area west of the Hassayampa River is designated as open space. There are also open space areas identified south of the ACC-certificated route in the northeast portion of the Study Area. These areas are designated as open space within future residential developments.

Transportation

The Bradshaw-Harquahala RMP (BLM 2010a) established a transportation corridor on BLM-managed public lands north and south of SR 74 for the purpose of envisioned future expansion of SR 74 (see **Appendix 4B**). The corridor is approximately seven miles long and extends approximately 0.50-mile either side of SR 74. Future expansion of SR 74 within this corridor would not require amendment of the Bradshaw-Harquahala RMP; however, it would require environmental analysis to comply with the NEPA.

3.6.4 Existing Land Use

Existing land uses include residential, mixed use, commercial and industrial development; undeveloped; recreational (parks and open space), and range (**Figure 3.6-3**). For purposes of this analysis, the term "undeveloped land" is defined to mean land that does not currently have existing residential or commercial buildings, facilities, or uses. Undeveloped land may be private lands that are part of a master planned community that is not yet fully developed to include residential or commercial facilities or uses, and may be in varying stages of planning or preparation for development.

3.6.4.1 Residential

Low- to medium-density residential nodes are the primary developed land use within and adjacent to the Study Area. These occur in dispersed areas within master-planned communities in the planning boundaries of the cities of Surprise and Peoria and the Town of Buckeye. These communities are located in the central, south, and southeastern portions of the Study Area. Master-planned suburban residential developments are located in the southeastern, southwestern, and western portions of the Study Area. Master-planned golf course communities are located within the Town of Buckeye and in the eastern portion of the Study Area in the City of Peoria.

Within unincorporated Maricopa County, there are several well-established communities including Circle City, Wittmann, and Morristown, which are primarily composed of low- to medium-density residential areas. Dispersed rural or large-lot (lots equal to or greater than 1 acre) residential developments are located throughout the Study Area in unincorporated Maricopa County. Some of the rural residential homes are considered ranches and include associated agricultural structures (e.g., barns) and/or private airstrips.

3.6.4.2 Commercial

Very little commercial development occurs within the Study Area. The commercial development that does exist is located primarily along US 60 and along Lake Pleasant Road between Dixileta Drive and Cloud Road. Many of the developed recreation facilities, such as golf courses, OHV tracks, and paintball facilities, also include a commercial component.

3.6.4.3 Recreation

Recreation uses within and adjacent to the Study Area include golf courses (Copper Canyon and Quintero Golf clubs), OHV areas (located south of the Raceway Substation and the Boulders Staging Area west of Lake Pleasant), and paintball facilities. Further discussion related to recreation is provided in **Section 3.9**.

3.6.4.4 Industrial

Industrial uses within and adjacent to the Study Area include automotive proving grounds, a regional landfill, mining operations, and manufacturing facilities. Two operational automotive proving grounds managed by Chrysler and Volvo Arizona are located in the north-central portion of the Study Area. The Northwest Regional Landfill, approximately 1,200 acres in size, is located south of the Study Area, just southeast of LAFB Auxiliary Field No. 1. Stone, sand, and gravel mining operations generally occur along the Hassayampa River near the Sun Valley Substation.

3.6.4.5 Utilities

Major transmission lines are located in the Study Area. A Western Area Power Administration (WAPA) 500kV transmission line originates from the northwest and extends east along the southern portion of the Study Area to the Westwing Substation. Two 500kV transmission lines operated by Salt River Project originate to the south of the Study Area and then extend east, parallel to the WAPA, to the Westwing Substation. Two 500kV transmission lines originate to the north of the Study Area and cross the eastern portion, extending south and passing the Morgan and Raceway Substations before terminating at the Westwing Substation.

In addition, one 230kV transmission line originates at the Humbug substation near Lake Pleasant and continues south, passing the Morgan and Raceway Substations before terminating at the Westwing Substation. Two 69kV transmission lines are present within the Study Area, primarily in developed and rural-residential areas along portions of US 60 and parallel to the Sun Valley Parkway.

There are 12 existing or future substations in the vicinity of the Study Area and the following seven substations are located within two miles of the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes.

- Raceway Substation near SR 74 and 99th Avenue (Existing)
- Humbug Substation near SR 74 and 99th Avenue (Existing)
- Morgan Substation west of New River Road along Cloud Road (Existing)
- Lakeside Substation north of Cloud Road along New River Road (Existing)
- Oberlin Substation near Patton Road and 243rd Avenue (Temporary)
- Morristown Substation near 251st Avenue and US 60 (Existing)
- Sun Valley Substation northwest of Sun Valley Parkway

Communication sites are scattered throughout the region. Four of the sites are located in the White Tank Mountains. Underground pipelines and other utility lines (e.g., power, telephone, cable, fiber-optic) also occur in the Study Area, primarily in developed areas (BLM 2010a). One cellular tower is located within two miles of the Proposed Action route, ACC-certificated route, and the Action Alternative routes, south of Lake Pleasant.

The CAP canal is a multi-purpose water resource development and management project that delivers Colorado River water from Lake Havasu on Arizona's western border to agricultural land in Maricopa, Pinal, and Pima counties, and to several Arizona communities, including the metropolitan areas of Phoenix and Tucson. The CAP canal is a 336-mile system of aqueducts, tunnels, pumping plants, and pipelines and is operated and maintained by the CAWCD. In addition to the water supply, the project also provides power, flood control, outdoor recreation, and fish and wildlife habitat benefits. Approximately 15 miles of the CAP canal are located within two miles of the Proposed Action route, ACC-certificated route, and the Action Alternative routes.

Near the northern portion of the Study Area, along SR 74, the ADOT, along with local municipalities, currently have many leases for roads and highways. The Quintero Golf and Country Club also lease easements for utilities servicing their facilities (BLM 2000).

While this description of utilities in the area is intended to be a thorough representation, it may not be all-inclusive, and other utilities may be present.

3.6.4.6 Mining

Approximately 51 existing sites that have been mined in the past and all or portions of seven mining districts are scattered throughout the Study Area with most being concentrated in the northwest and eastern portions. Sand and gravel and other saleable minerals are located in the eastern, western, and southwestern portions of the Study Area. However, there are currently no active saleable mineral operations on BLM-managed lands (BLM 2012a). Metallic and other locatable minerals occur in the northwest and eastern portion of the Study Area (URS 2012c). There are 88 active lode mining claims and 26 active placer mining claims distributed between those areas (BLM 2012c). Portions or all of some mining claims located in Township 6 North, Range 1 West, Sections 30 and 31, as well as in Township 6 North, Range 2 West, Sections 25 and 26 may underlie parts of the Proposed Action and Action Alternative routes. There are currently two approved BLM Notice level permits for exploration operations on mining claims in Township 6 North, Range 4 West, Section 22 and

one Plan of Operations pending approval in Township 6 North, Range 5 West, Section 25 (BLM 2012d).

3.6.4.7 Rights-of-Way

The USBR has multiple ROWs for transmission lines and access roads for the CAP. There are also numerous pipelines and telecommunication lines in the Study Area. Existing ROWs on BLM-managed land that occur within the Study Area are listed in **Table 3.6-3**. The ROWs consist of various transmission, distribution, and communication lines; roads, and easements.

Table 3.6-3 ROWs Crossed by the Proposed Action and Action Alternatives

ROW SERIAL #	ROW HOLDER	DESCRIPTION
AZA 000390	ADOT	Road
AZA 000624	ADOT	Road
AZA 006105	ADOT	Road
AZA 010224	City of Peoria	Road
AZA 023254FD	Seven West Prop.	Patent
AZA 027843	Larry W. White	Section 302 FLPMA
AZA 033383	Accipiter Communications	Fiber Optic Facilities
AZA 03338301	Accipiter Communications	Fiber Optic Facilities
AZA 035079	APS	Other Energy Facilities
AZA 013875	BLM Lake Havasu Field Office	Other Energy Facilities
AZA 017813	BLM Lake Havasu Field Office	Road
AZA 021410FD	Arizona White Tank Association	Patent
AZA 022075	BLM Lake Havasu Field Office	Water Facility
AZA 030349	West Maricopa Combine, Inc.	Water Facility
AZA 033224	Town of Buckeye	Road
AZA 033449	Town of Buckeye	Recreation
AZA 033510	APS	Other Energy Facilities
AZA 033551	Southwest Gas Corp.	Oil and Gas Facilities
AZA 033552	Accipiter Communications	Fiber Optic Facilities
AZA 033554	Lyle Anderson Dev. Co.	Other Energy Facilities
AZA 033569	APS	Other Energy Facilities
AZA 035079	APS	Other Energy Facilities

Source: BLM 2012e

3.6.4.8 Air Transportation Facilities

Air transportation facilities include a Department of Defense airport (LAFB Auxiliary Field No. 1 in the south-central portion of the Study Area), a public airport (Pleasant Valley Airport), and four private airstrips (refer to **Figure 3-12-1**). LAFB Auxiliary Field No. 1 is located 15 miles southeast of the main base in the City of Surprise. Auxiliary Field No. 1 consists of 400 acres of federally owned land and approximately 705 acres leased from the State of Arizona. A portion of Auxiliary Field No. 1 is located within the ACC-certificated route at 267th Avenue and Lone Mountain Road. LAFB has defined APZs associated with Auxiliary Field No. 1, where above-ground facilities or land uses are limited due to potential impacts on or interference with flight operations (Department of Defense 2007).

3.6.4.9 Zoning

Maricopa County

There is one zoning district within the Study Area for Maricopa County. It is classified as Residential, One Acre Per Dwelling Unit (du) (Ru-43).

City of Peoria

There are multiple zoning classifications within the Study Area for the City of Peoria. All residential zoning districts in the Study Area are classified as Suburban Ranch (SR-43). There is a small portion of the Study Area classified as Intermediate Commercial (C2). Multiple special districts occur throughout the Study Area, including:

- General Agriculture (AG)
- Planned Community Development (PCD)
- Special Use (SU)
- Flood Plain (FP)
- Planned Unit Development Option (PUD)

City of Surprise

There are two zoning classifications within the Study Area for the City of Surprise. The area north of Dove Valley Road is zoned as a Planned Area Development (PAD). A very small portion of the city limits north of Beardsley Road west of 243rd Avenue is located in the Study Area and is zoned R1-43 Residential.

Town of Buckeye

The portion of the town limits that lies within the Study Area is categorized as Planned Community.

3.6.5 Range Resources

Historic grazing practices in northwest Arizona, including within the Study Area, are similar to those employed in the northwest and southwest U.S. prior to the mid-twentieth century. Enactment of the Taylor Grazing Act of 1934 provided parameters for livestock grazing in the form of grazing allotments, regulation of number and type of livestock (i.e., cattle, sheep, and horses), and season of use. BLM uses monitoring studies and rangeland health assessments to determine if proper grazing management will meet public land health standards as outlined in the *Arizona Standards for Rangeland Health and Guidelines for Grazing Administration* (BLM 1997).

Grazing permits are required for livestock use on public lands. Permits are generally authorized for 10 years and outline terms and conditions for annual grazing utilization. Grazing allocations in terms of animal unit months (the amount of forage needed to sustain one cow, five sheep, or five goats for a month), season of use, and number and type of livestock are among the mandatory terms and conditions put forth in each permit. Other terms and conditions include methods to meet management objectives. Annual adjustments to a grazing system are possible if the livestock operator (permittee) has met the terms and conditions of his/her permit.

Livestock grazing is permitted on approximately 39,802 acres of BLM land and 85,308 acres of State Trust land within the Study Area (**Table 3.6-4**, **Figure 3.6-4**). Grazing allotments are classified according to the type of forage available for livestock. Two classifications are used: perennial and ephemeral. Perennial forage is available consistently each year through perennially producing grasses, forbs, and shrubs. Ephemeral forage consists of annual grasses and forbs that become productive only in response to adequate spring moisture and warm temperatures. On ephemeral allotments, grazing is authorized only when ephemeral forage is abundant. All grazing allotments within the Study Area are designated as ephemeral. Cattle, horse, and sheep grazing operations occur within the Study Area.

Table 3.6-4 BLM and State Trust Land Grazing Allotments within the Study Area

ALLOTMENT NAME	ALLOTMENT ACRES WITHIN STUDY AREA	PERCENTAGE OF ALLOTMENT LOCATED WITHIN STUDY AREA
BLM Land		
Douglas	12,929	18
Lower Bo Nine	13,188	65
Bo Nine	12,485	60
West Wing Mountain	688	18
Ridgeway-Kong	42	100
Lockett	106	47
Desert Hills	365	7
Total on BLM Land	**39,803**	
State Trust Land		
Douglas	11,836	23
Lockett	1,383	5
Desert Hills	3,248	7
Maughan	1,423	58
Durbano 5-1227	19,270	71
Durbano 5-95000	5,047	55
McGuire	13,929	60
Sheep Springs	3,774	46
Widow Snell	5,857	26
Unknown 5-308	3,554	48
Unknown	14,428	9
Total on State Trust Lands	**83,749**	

Sources: BLM 2012f; ASLD 2012c.

3.7 PUBLIC HEALTH AND SAFETY

This and the following subsections provide information on noise, electromagnetic fields, and fire and fuels management as the topics relate to public health and safety associated with the Project. The Study Area boundaries for this assessment include lands within and in proximity to the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes. However, a specific Study Area associated with each resource is defined in the sections that follow.

The information provided in the following subsections is taken from a report titled *Environmental Resource Report for Public Health and Safety, Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012e). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review.

3.7.1 Noise

This subsection presents an assessment of the existing outdoor ambient sound environment in the vicinity of the Study Area. With respect to noise assessment, the Study Area of interest includes an area out to two miles from the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes.

In general, this Project Study Area encompasses the northern portion of Maricopa County, Arizona, immediately northwest of and adjacent to the Phoenix metropolitan area that includes communities such as the City of Peoria, Sun City, Sun City West, and the Town of El Mirage. Bisected by US 60 that parallels the northwest-southeast aligned Burlington Northern Santa Fe Railway (BNSF) rail line, the Study Area could reasonably be characterized as a mixture of sparsely developed and undeveloped land, with a few densely developed communities such as Festival Ranch, Patton Place Estates, Arizona Traditions, Corte Bella, Rancho Cabrillo, Vistancia, Wittmann, and Circle City. The Study Area is approximately bounded to the north by SR 74 and to the south by Loop 303.

The ambient sound environment of this Study Area would generally be expected to vary with proximity to the major aforementioned surface transportation routes and developed areas with greater than average population density. This subsection describes the anticipated dominant and/or likely noise sources of (i.e., contributors to) the ambient sound environment, an estimate of the probable range of sound levels expected in this environment, and a comparison with recent (i.e., within three years of this report) measurements of outdoor sound at occupied locations in Maricopa County that are external to the Study Area, but might nevertheless be considered reasonably comparable.

3.7.1.1 Laws, Ordinances, Regulations, and Standards

Federal

There are no federal LORS that directly affect this Project with respect to noise. However, there are guidelines at the federal level that direct the consideration of a broad range of noise issues as listed below:

- National Environmental Policy Act (42 USC 4321, et seq.) (Public Law-91-190) (40 CFR § 1506.5)
- Noise Control Act (NCA) of 1972 (42 USC 4910)
- U.S. Department of Housing and Urban Development Noise Guidelines 24 CFR § 51 subpart B

Environmental Protection Agency

The EPA has published a guideline that specifically addresses issues of community noise (EPA 1974). This guideline, commonly referred to as the "levels document," contains goals for noise levels affecting residential land use of day-night average sound level (L_{dn}) <55 A-weighted decibel (dBA) for exterior levels and L_{dn} <45 dBA for interior levels.

Occupational Safety and Health Administration

Worksite noise levels are regulated by the Occupational Safety and Health Act of 1970 (29 CFR § 1910.95). The noise exposure level of workers is limited to 90 dBA, over a time-weighted average eight-hour work shift ($TWA_{8\text{-hour}}$) to protect hearing. If there are workers exposed to a $TWA_{8\text{-hour}}$ above 85 dBA (i.e., the OSHA Action Level), then the regulations call for a worker hearing protection program that includes baseline and periodic hearing testing, availability of hearing protection devices, and training in hearing damage prevention.

Department of Housing and Urban Development (HUD)

The U.S. Department of Housing and Urban Development Noise Guidebook Chapter 2 (24 CFR Section 51.101(a)(8)) also recommends that exterior areas of frequent human use follow the EPA guideline of 55 dBA L_{dn}. However, the same Section 51.101(a)(8) indicates that a noise level of up to 65 dBA L_{dn} could be considered acceptable.

State

Arizona Corporation Commission

For power plant projects, the ACC states in its Rules of Practice and Procedure R14-3-219:

> *"Describe the anticipated noise emission levels and any interference with communication signals which will emanate from the proposed facilities."*

Exhibit I, as part of an ACC CEC application, is where such anticipated noise emission levels and potential interference with communication signals are discussed.

Arizona Division of Safety and Health

The Arizona Occupational Safety and Health Act of 1972 provides safety and health protection for employees in Arizona. The act requires each employer to furnish his or her employees with a place of employment free from recognized hazards that might cause serious injury or death. The Act further requires that employers and employees comply with all workplace safety and health standards, rules, and regulations promulgated by the Industrial Commission. The Arizona Division of Occupational Safety and Health, a division of the Industrial Commission of Arizona, administers and enforces the requirements of the act. With respect to noise exposure to workers, the Arizona OSHA regulations closely mirror

the federal OSHA regulations described above and, for practical implementation, are herein considered to be equivalent.

Local

Under Environment and Environmental Effects within its 2020 Comprehensive Plan Elements, Maricopa County broadly considers noise as a potential adverse effect and the consequence of increasing development and its accompanying sound sources (Maricopa County 2002). At the same time, it acknowledges that the NCA of 1972 has no enforcement means, and describes reliance on proper community planning, and other agencies such as the Federal Aviation Administration that can influence noise controls and land use development that is compatible with nearby aviation facilities (e.g., LAFB and Williams Gateway Airport).

While there is a Maricopa County Noise Ordinance "P-23," its Public Disturbances context is qualitative, based on audibility of a noise heard from within a closed residential structure that is within 500 feet of the boundary of the offending noise-producing property (Maricopa County 2006). Further, it appears that construction and "power plant equipment" during normal operations is exempt from this disturbance criterion.

3.7.1.2 Fundamentals of Acoustics

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and that interferes with or disrupts normal activities. Although prolonged exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise; the perceived importance of the noise, and its appropriateness in the setting; the time of day and the type of activity during which the noise occurs; and the sensitivity of the individual.

Noise may also affect wildlife, as potentially demonstrated by apparent disruption of resting, foraging, migrating, and other life-cycle activities; however, sensitivity to noise varies with species. Further, wildlife observed in proximity to human activities and land uses have likely developed habituation (to a degree that allows their life-cycle activities to continue without significant effect) to continuous, intermittent, and even impulsive man-made sounds.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by several variables, including frequency and intensity. Frequency describes the pitch of the sound and is measured in Hertz (Hz), while intensity describes the sound's loudness and is measured in decibels (dB). dB are measured using a logarithmic scale. A sound level of zero dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels in the range of approximately 110 to 120 dB can be felt inside the human ear as discomfort, while levels between 130 to 140 dB are felt as pain (Berglund and Lindvall 1995). The minimum change in the sound level of individual events that an average human ear can detect is about one to two dB. A three to five dB change is readily perceived. A change in sound level of about 10 dB is usually perceived by the average person as a doubling (or if decreasing by 10 dB, halving) of the sound's loudness.

Due to the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically; however, some simple rules are useful in dealing with sound levels. For instance, if a sound's energy is doubled, the sound level increases by three dB, regardless of the initial sound level. By way of example, if a sound intensity of 60 dB is doubled, the new intensity will be 63 dB; likewise, if a sound intensity level of 80 dB is doubled, the new intensity will be 83 dB.

Sound level is usually expressed by reference to a known standard. This section refers to sound pressure level (SPL, or L_p) and sound power level (PWL, or L_q). In expressing sound pressure on a logarithmic scale, the sound pressure is compared to a reference value of 20 micropascals (µPa). SPL depends not only on the power of the source, but also on the distance from the source and on the acoustical characteristics of the space surrounding the source. PWL, on the other hand, is independent of these environmental factors. To help distinguish the two descriptors, one may use a lighting analogy: the wattage of a light bulb when turned on will be a constant 100 watts, but the brightness or intensity of the light changes with receiver distance and other parameters (e.g., are the room walls painted white, which is reflective, or an absorptive black color).

Sound from a tuning fork contains a single frequency (a pure tone), but most sounds one hears in the environment do not consist of a single frequency and instead are composed of a broad band of frequencies differing in sound level. The method commonly used to quantify environmental sounds consists of evaluating all frequencies of a sound according to a weighting system that reflects the typical frequency-dependent sensitivity of average healthy human hearing. This is called "A-weighting," and the decibel level measured is referred to as dBA. In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA "curve" of decibel adjustment per octave band center frequency (OBCF) to a "flat" or unweighted SPL.

Although sound level value may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a mixture of noise from distant sources that creates a relatively steady background noise in which no particular source is identifiable. A single descriptor, the L_{eq}, may be used to describe sound that is changing in level. L_{eq} is the energy-mean dBA during a measured time interval. It is the "equivalent" constant sound level that would have to be produced by a given source to equal the acoustic energy contained in the fluctuating sound level measured. In addition to the energy-average level, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the maximum L_{eq} (L_{max}) and minimum L_{eq} (L_{min}) indicators that represent the root-mean-square maximum and minimum noise levels measured during the monitoring interval. The L_{min} value obtained for a particular monitoring location is often called the acoustic floor for that location.

To describe time-varying character of environmental noise, the statistical noise descriptors L_{10}, L_{50}, and L_{90} are commonly used. They are the noise levels exceeded 10 percent, 50 percent, and 90 percent of the measured time interval. Sound levels associated with the L_{10} typically describe transient or short-term events. Half of the sounds during the measurement interval are softer than L_{50} and half are louder, so it is often called the "median" sound level. Levels associated with L_{90} often describe background noise conditions and/or continuous, steady-state sound sources.

Day-night sound level (L_{dn}) is defined as the L_{eq} (in dBA) for a 24-hour day with a 10 dB penalty added to nighttime sound levels (10:00 p.m. to 7:00 a.m.) in order to compensate for increased sensitivity to noise during usually quieter nighttime hours. The CNEL is also defined as the L_{eq} for a 24-hour day. It is calculated by adding a 5 dB penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.) and a 10 dB penalty to sound levels at night (10:00 p.m. to 7:00 a.m.), thus providing somewhat greater compensation than L_{dn} for increased sensitivity during such time periods when a quiet environment is expected.

Sound levels of typical noise sources and environments are provided in **Table 3.7-1** to provide the reader a frame of reference.

Table 3.7-1 Sound Pressure Levels of Typical Noise Sources and Noise Environments

COMMON OUTDOOR ACTIVITIES	NOISE LEVEL (dBA)	COMMON INDOOR ACTIVITIES
Jet Fly-over at 1000 ft (300 meters [m])	110-100	Rock Band
Gas Lawn Mower at 3 ft (1 m)	100-90	
Diesel Truck at 50 ft (15 m), at 50 mph (80 km/hr)	90-80	Food Blender at 3 ft (1 m)
Commercial Area, Gas Lawn Mower at 100 ft (30 m)	70	Vacuum Cleaner at 10 ft (3 m)
Heavy Traffic at 300 ft (90 m)	60	Normal Speech at 3 ft (1 m)
Quiet Urban Daytime	50-40	Large Business Office
Quiet Urban/Suburban Nighttime	40-30	Theater, Large Conference Room (Background)
Quiet Rural Nighttime	30-20	Library, Bedroom at Night, Concert Hall (Background)
	20-10	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	0	

Source: California Department of Transportation 2009

3.7.1.3 Existing Noise Sources in the Study Area

Man-made sources of noise primarily include roadway and rail traffic, aviation, commercial and industrial operations (including agricultural activity and equipment), human activities (e.g., children at play, off-road vehicle operation, property landscaping or maintenance, irrigation, etc.) as well as operating heating, ventilation, and air conditioning (HVAC) equipment at residences or agricultural land uses where such activities occur. The flows of water in canals, along with operating pumps and other equipment, can also be a significant source of continuous noise.

Table 3.7-2 illustrates the proximity of residential communities within the Study Area to the Action Alternative routes and the existing likely sources of dominant noise that currently contribute to the ambient sound setting.

Table 3.7-2 Proximity of Project Alternatives and Anticipated Dominant Existing Ambient Noise Sources to Identified Residential Communities in Study Area

(Footnotes at end of table.)

Identified Nearby Residential Community (direction from and approximate closest distance to Proposed Action and Action Alternatives ROW Centerline, in miles)						Anticipated Existing Dominant Noise Source (direction from and approx. distance to Identified Nearby Residential Community
PROPOSED ACTION	**ALT. 1**	**ALT. 2**	**ALT. 3**	**PRIMARY SEGMENT FOR SUB-ALTERNATIVE**	**SUB-ALTERNA-TIVE**	
Sun City Festival (east, 0.5 mile)				Sun City Festival (southwest, 11 miles)		Sun Valley Parkway (south, 0.5 mile)
Residences on West Myers St. near N. 235th Ave. (east, < 0.25 mile)				Residences on West Myers St. near N. 235th Ave. (south, 2.5 miles)		BNSF rail, US 60 (both northeast, 2 miles)
Circle City (west, 0.5 mile)					Circle City (west-northwest, 0.5 mile)	BNSF rail, US 60 (both east, < 0.25 mile)
Thunder Ridge Airpark (west, 0.5 mile)					Thunder Ridge Airpark (north-northwest, 0.5 mile)	BNSF rail, US 60 (both southwest, < 0.25 mile)
Residences on West Maddock Road (south, 0.5 mile)				Residences on West Maddock Road (east, 10 miles)		SR 74 (north, 1.5 miles)
Quintero Golf & Country Club (north, <1 mile)		Quintero Golf & Country Club (north, 1 mile)	Quintero Golf & Country Club (north, 3 miles)	Quintero Golf & Country Club (east-northeast, 5 miles)		SR 74 (south, < 1 mile)

Table 3.7-2 Proximity of Project Alternatives and Anticipated Dominant Existing Ambient Noise Sources to Identified Residential Communities in Study Area (Continued)

(Footnotes at end of table.)

Identified Nearby Residential Community (direction from and approximate closest distance to Proposed Action and Action Alternatives ROW Centerline, in miles)						Anticipated Existing Dominant Noise Source (direction from and approx. distance to Identified Nearby Residential Community
PROPOSED ACTION	ALT. 1	ALT. 2	ALT. 3	PRIMARY SEGMENT FOR SUB-ALTERNATIVE	SUB-ALTERNA-TIVE	
Lake Pleasant camping sites and facilities (north, 1.5 miles)			Lake Pleasant camping sites and facilities (north, 3.5 miles)	Lake Pleasant camping sites and facilities (east, 14 miles)		SR 74 (south, 1.5 miles)
Residences on West Dove Valley Road between N. 171st and 163rd Ave. (south, 3 miles)			Residences on West Dove Valley Road between N. 171st and 163rd Ave. (south, 1 mile)	Residences on West Dove Valley Road between N. 171st and 163rd Ave. (southwest, 6 miles)		SR 74 (north, 3 miles) Evaporative ponds north of AZ Canal * (south, 1.5 miles)

*View of online aerial photos suggests there are aerator pumps in these ponds, which if true and were running would cause a fairly continuous source of noise emission.

Natural sounds would be expected to include seasonal or year-round contribution from present wildlife species, with examples such as birdsong and insect activity (e.g., cricket or beetle chirps). Livestock and domesticated animals (e.g., horses, dogs, etc.), while associated with human activity, might also be considered part of the natural sound environment. Wind passing through ground vegetation also produces audible sound contribution, which can even dominate a background sound environment when sustained average wind speeds are of sufficient magnitude.

3.7.1.4 Baseline/Ambient Noise Level

The U.S. DOT, Federal Transit Administration (FTA) provides guidance for coarsely estimating ambient outdoor sound level based on either proximity to roadways or rail, or population density (U.S. DOT FTA 2006). Using the former, and based on the distances between the road and/or rail sources and the identified nearby residential communities as indicated in **Table 3.7-2**, ambient sound level in terms of L_{dn} could be expected to range from 45 to 60 dBA.

Based on a county-wide population density of approximately 334 persons per square mile, the estimated daytime and nighttime average sound levels would be 45 and 35 dBA L_{eq}, respectively, and per FTA guidance. Given the sensitivity penalty applied to nighttime hours, the effective L_{dn} would be approximately 45 dBA per the same FTA guidance and consistent with the lower end of the range derived from the road/rail proximity estimation method.

This 45 to 60 dBA L_{dn} estimated outdoor ambient sound level range is also generally consistent with measured environmental noise levels at other Maricopa County locations sharing similar characteristics such as distance to major and minor roadways, desert landscape, and the proximity of sparsely distributed occupied residences and human activities. For example, in the vicinity of Rainbow Valley, southwest of the Phoenix metropolitan area and bounded by the Buckeye Hills to the west and the North Maricopa Mountains to the south, 24-hour duration measurements conducted in August 2009 at three representative locations resulted in day-night levels ranging from 45 to 50 L_{dn}, as reported in the Sonoran Solar Energy Project Final EIS (BLM 2011c). In another example, 24-hour ambient outdoor sound level monitoring results at two representative locations in the vicinity of a primarily rural/agricultural area 75 miles west of Phoenix and 1.5 to 3.5 miles south of Interstate 10 (I-10) were 54 and 60 dBA L_{dn}, respectively, as reported in the Starwood Solar I CEC (Starwood Solar I LLC 2009). These sample levels are summarized in **Table 3.7-3**.

Table 3.7-3 Sample Long-term Measurements from Previous Ambient Sound Surveys

PROJECT	"LONG-TERM" AMBIENT SOUND MEASUREMENT LOCATION	DAY-NIGHT NOISE LEVEL (L_{DN})
Sonoran Solar Energy Project	Hayes Road	49.7
	Baseline Road	49.8
	Sonoran Desert National Monument	45.4
Starwood Solar I	491st Ave. and Willetta St.	53
	49025 W. Pierson	60

Sources: BLM 2011a, Starwood Solar I LLC 2009

3.7.2 Electromagnetic Fields

The following subsections comprise an assessment of human Electro Magnetic Field (EMF) issues associated with the Project. The Study Area for this assessment includes the lands within and adjacent to the Proposed Action route, the ACC-certificated route, and the other Action Alternative routes.

The purpose of the EMF assessment was to (1) review and summarize current and best available information regarding EMF; (2) describe the typical electric and magnetic field

levels associated with common appliances, devices, transmission lines, and substations; and (3) identify those properties requiring more detailed investigation.

The EMF assessment included a review of literature relating to EMF, power transmission lines and substations, and human health risks associated with EMF; and a review of documentation, maps, and satellite images of the Study Area.

Following a discussion of the pertinent state, national, and international standards pertaining to EMF, potential human risks from exposure to EMFs are presented in the context of the Project.

3.7.2.1 Laws, Ordinances, Regulations, and Standards

State and National

Several organizations have developed guidelines for EMF exposure, including individual states, the Federal Communications Commission (FCC), the Institute of Electrical and Electronics Engineers (IEEE), and the American Conference of Governmental Industrial Hygienists (ACGIH).

Neither the Arizona government nor the United States government has regulations limiting EMF exposure from power transmission lines.

At the national level, the IEEE standard C95.6 outlines public and occupational exposure limits for magnetic fields. The IEEE standard is outlined in **Table 3.7-4** below (IEEE 2002), with the areas for 60 Hz EMF highlighted in red text. Because electric power within the United States is provided at 60 Hz, the EMF limits at 60 Hz are of most importance. (Note that harmonics of 60 Hz, such as 120 Hz, 180 Hz, may also have elevated EMF levels. However, the highest EMF levels are expected at 60 Hz). Note that the IEEE levels are recommendations only, not regulations.

Table 3.7-4 IEEE Magnetic Field Exposure Levels for the General Public

BODY PART	FREQUENCY RANGE (HZ)	B FIELD (MG)
Head & Torso	20 – 759	9.04×10^3
	759 – 3,000	$6.87 \times 10^6/f$
Arms or Legs	< 10.7	3.53×10^6
	10.7 – 3,000	$3.79 \times 10^7/f$
	60	632,000

Notes: /f = divide by the frequency, mG = milliGauss, Hz = hertz

The FCC standards are mandatory for occupational exposure to EMFs for FCC-licensees and grantees and only cover the frequency range from 300 kilohertz (kHz) to 100 gigahertz (GHz) (FCC 1999).

The ACGIH provides that occupational exposures should not exceed 10 Gauss (G) (10,000 mG), which corresponds to 1 milliTesla (mT). ACGIH additionally recommends that workers with pacemakers should not exceed 1,000 mG (0.1 mT). The ACGIH 10,000 mG guideline level is intended to prevent effects, such as induced currents in cells or nerve stimulation. However, the ACGIH guidelines are for occupational exposure, not general public exposure (Patterson et al. 1998).

International

Internationally, many countries have developed their own EMF guidelines. Most of these regulations are based on the International Commission on Non-Ionizing Radiation Protection (ICNIRP) recommendations, including the European Union (EU).

The ICNIRP has made a series of recommendations for limiting EMF exposure to humans based on the epidemiological data available from verifiable research studies (ICNIRP 1998). Based on ICNIRP's work, the EU has adopted these same standards for EMF exposure (European Council Recommendation 1999). These standards are summarized in **Table 3.7-5**. While the guidelines are voluntary, the levels are designed to prevent undue health risks associated with EMF exposure. The United States does not have any regulations on EMF exposure. Also note that the magnetic fields associated with transmission lines are less than the ACGIH and ICNIRP limits.

Table 3.7-5 Summary of ICNIRP EMF Exposure Limits

FREQUENCY	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD (µT)
Occupational: 0.025 to 0.82 kHz	500 /f	25 /f
Occupational: 60 Hz	8,333	416
Public: 0.025 to 0.82 kHz	250 /f	5 /f
Public: 60 Hz	4,167	200 µ00 7 2,000 mG

V/m = volts per meter; µT = microtesla

3.7.2.2 Overview of Electromagnetic Fields

EMF Basics

Electromagnetic (EM) radiation is a term given to a wide range of invisible waves, including X-rays, ultraviolet light, visible light, radio waves, and microwaves. EM radiation is classified based on either the wavelength, measured in meters, or the frequency (how fast the wave is moving), measured in Hertz (also known as cycles per second).

While a familiar form of EM radiation is visible light, visible light is only one part of the entire EM spectrum. Humans also use other forms within the spectrum (e.g., radio waves for

communication, infrared [IR] waves for night-vision goggles, and microwaves for cooking food).

For power transmission lines and substations, frequencies are around 60 Hz, primarily because the alternating current (AC) is generated at 60 Hz. These extremely low frequencies (ELF) are the specific region that this assessment focuses on. ELF spans from 3 Hz to 3,000 Hz (or 3 kHz).

The distinguishing characteristic of EM radiation is that all EM radiation has two components: an electric field and a magnetic field. These components can be thought of as two separate but related waves, which propagate at 90 degrees to each other.

The Link between Electricity and Magnetism

Electricity and magnetism are inherently linked through EM radiation. Electricity is the motion of electrons. Whenever an electron moves, a magnetic field will also be produced. When electrons move through a wire, the electrons generate both electric and magnetic waves. The opposite is also true: electric fields can be generated by magnets. The electromagnet—making a magnet out of a battery, a nail, and some wire—is an example of this principle.

The electric and magnetic fields are generated at right angles to one another. The electric field and magnetic field generated are inclusively classified as EMFs. Extrapolating this concept out to the flow of electrons through a wire, as the electrons flow, carrying the electricity through the wire, a wave of EMFs are generated in all directions that are perpendicular to the flow of electrons. This results in EMFs arranged concentrically around the wire and emanating outward. The EMF waves emanate out in all directions from the wire, dissipating as the EMF waves move farther away from the wire. The wire itself does not move, although the electrons within the wire do move. As a result, the EMFs associated with the electric current extend the entire length of the wire. The EMF field strength is highest closest to the wire and drops off as a function of the inverse of the square of the distance. Thus, the EMF field strength at two feet away from the wire is one-quarter of the strength at 1 foot away from the wire.

Note that this is a simplified case for one wire in space. When multiple wires, or other EMF generating sources, are involved, the EMFs generated from each source can interact with each other. The interactions can be either additive, creating larger EMFs, or subtractive, cancelling each other out all or part of the way.

Since electricity and magnetism are inherently related, the stronger the electrical current, the stronger the magnetic field. The larger the amount of current, the larger the magnitude of EMFs generated. EMF strength is also proportional to proximity: the closer to the source of the EMFs, the stronger the EMF field. The relationship between the strength of the EMF and the distance from the source is a function of the inverse of the square of the distance.

Measuring EMFs

EMFs can be measured in a variety of ways. For a given electric field of strength **E**, the electric field exerts a force on an electric charge. This force is expressed in Volts per meter (V/m). Likewise, magnetic fields can exert a force on a moving electric charge. The magnetic

field can be described in two ways: as a magnetic flux density, **B** (expressed in units of Tesla or Gauss), or as a magnetic field strength, **H** (expressed in units of Amps per meter [A/m]).

TESLA (T)	GAUSS (G)
1	1×10^4

In most EMF studies, the magnetic flux density, **B**, is measured using a special type of detector, called a Gauss meter. The Gauss meter works on the same principles just described, only backwards: the magnetic field induces an electric current in the detector, which is directly proportional to the strength of the field. The strength of the EMF can thus be calculated. Measurements on the Gauss meter are reported in Gauss or Tesla. For conversion purposes, one T is equal to 1×10^4 G. Typically, magnetic fields in the literature are reported in either mG or microTesla (μT), where 1 G = 1×10^3 mG and 1 T = 1×10^6 μT.

Within this context, many different instruments are available for measuring the magnetic field of an EMF. These detectors usually have been calibrated for a specific set of frequencies.

3.7.2.3 Electromagnetic Fields Health Overview

All EMFs have the potential to interact with the human body in three different ways, each of which is discussed in further detail below.

Electric Field Interactions

Time-varying electric fields may cause ions (either positively or negatively charged molecules or atoms within the human body) to flow, may cause the reorientation of polar molecules within the body, and may cause the formation of polar molecules that would otherwise be non-polar. The magnitude of the effects depends on the part of the body that is exposed (for example, the brain and blood contain a large number of ions), the frequency of the EMFs, and the magnitude of the electric field (ICNIRP 1998). In order to potentially cause adverse health effects, the power density of the EMF must be in the range of 10-100 mA/m. This value is not achieved under power transmission lines.

Certain chemical reactions within the body generate charged molecules, called free radicals, which are susceptible to electric fields. The electric fields may affect how many free radicals are generated, the orientation of the free radicals in space, or the orientation of the electrons within the free radical. These phenomena may, in turn, affect the amount or type of biochemicals that result from a chemical reaction within the body (ICNIRP 1994).

Magnetic Field Interactions

Time-varying magnetic fields couple with the human body and result in induced electric fields, which in turn result in electric currents within the body. The magnitude of the effect depends on the strength of the magnetic field, the size of the person, and the type of tissue exposed (ICNIRP 1998).

Certain portions of the body are more susceptible to magnetic fields. Blood, for example, is made up of many charged particles, called electrolytes, flowing through the body. These electrolytes can interact with a magnetic field, thereby causing an electric current within the body as the blood flows. The effect is compounded when human beings move within the

magnetic fields, which causes more variation of the magnetic field strength, which in turn causes variations of the induced electric current (ICNIRP 1994). A review of recent research by the ICNIRP (2010) has resulted in a shift in their recommendations regarding the biological effects of EMF. The new ICNIRP recommendations for EMF exposure are based on induced internal electric fields, not on induced current density. Previous recommendations were based on the current density, but induced electric fields have been identified as the value that determines the biological effect. Note that the strength of the induced electric field, and hence the strength of the time-varying magnetic field, has to be relatively high in order to observe biological effects, on the order of 10,000 mG (several milliTesla) (ICNIRP 1998). Such high levels will not be present near the transmission lines associated with this Project.

Magnetic Field Energy Transfer

When exposed to stationary magnetic fields (magnetic fields that do not vary with time), the human body can absorb energy from the fields, causing an increase in body temperature. The energy is absorbed as the ions within the human body attempt to align themselves with the magnetic field, much as a compass needle attempts to orient itself with the Earth's magnetic field (ICNIRP 1994). However, this effect is only significant for EMFs with frequencies above 100 kHz (ICNIRP 1998). For this Project, EMF frequencies would be approximately 60 Hz, which is substantially lower than the 100 kHz threshold required to increase body temperature.

3.7.2.4 Health Effects of Electromagnetic Fields

Scholarly journals and the Internet are replete with studies reporting the health effects of EMFs. Because this Project research is focusing on the ramifications of locating transmission lines and substations, this assessment will focus specifically on ELF EMFs, which is the region of the EMF spectrum that power lines and substations generate.

The publications can be classified in several different ways:

Based on Positive or Negative Impacts

Some research on ELF EMFs has concluded that negative health effects may be linked to exposure to ELF EMFs (Genuis 2008; Hamza et al. 2005; Kheifets et al. 2006; Raz 2006;). However, the research is not in agreement on what type(s) of negative health effects may result from EMF exposure. In addition, the research has found a weak association between any health effects and EMF exposure.

Several recent studies have focused on the potential medical treatment benefits of using EMFs under controlled conditions (Zorzi et al. 2007; Selvam et al. 2007). These research papers claim that localized use of specific EMFs can result in beneficial anti-inflammatory results, especially post-surgery.

Based on Location/Country

Many studies have been conducted within the United States and are summarized by ICNIRP (2001). The ICNIRP was very discriminating in their selection of published articles considered for review. Namely, the ICNIRP accepted only those papers published in peer-reviewed, scholarly articles with sufficiently large sample sizes to calculate an effect. The ICNIRP did not accept anecdotal evidence, case studies, or research that had questionable

controls or scientific methods. Based on these criteria, the ICNIRP has concluded that a potential exists for adverse health effects from both adult and childhood exposure to high level ELF EMFs. As a result, the ICNIRP has set forth guidelines for EMF exposure, which were discussed previously in this assessment. The ICNIRP focused on health effects that had a high correlation to incidence of disease, such as leukemia and cardiovascular disease. Adult cancer, however, was not as thoroughly discussed in the ICNIRP paper. Reasons cited for questioning EMF cancer studies include the following:

1. Cancer can manifest itself years after exposure, making cancer difficult to directly correlate to EMF exposure.
2. Many other confounding variables within a person's lifetime may increase the likelihood for cancer (i.e., chemical exposure, smoking, or exposure to ionizing radiation).
3. Cancer has many forms. Usually, one variable (i.e., chemical exposure to benzene) results in a specific, identifiable type of manifesting cancer. However, studies that attempted to draw a link between EMF exposure and cancer were not consistent in the type of cancer that EMF exposure allegedly increased.

Many studies have been conducted within Europe (Frija et al. 2006; San Segundo & Roig 2008; Hamza et al. 2005; Ahlbom 2008), largely because the European Council has acknowledged a weak association between childhood leukemia and exposure to ELF EMFs (Scientific Committee on Toxicity, Ecotoxicity and the Environment [SCTEE] 2001; European Council Recommendation 1999). The basis for this decision was largely from research concluding that ELF EMF exposure to children caused a statistically significant increased incidence of childhood leukemia (SCTEE 2001). The result has been a European Council Recommendation (1999) that set EMF exposure limits for public exposure to all EMFs. The European Council's recommendations are based on the ICNIRP guidelines for EMF exposure. Note that in 2010, the ICNIRP modified their recommendations for EMF exposure and stance on the link between childhood leukemia and EMF. The ICNIRP (2010) states that the results that came out of the research on childhood leukemia and EMF could be attributed to "a combination of selection bias, some degree of confounding, and chance." Note also that all EMF levels expected for this Project are well below current ICNIRP exposure limits.

Residential Exposure

The largest portions of the published work on EMFs and human health are from studies of the general public (SCTEE 2001; Genuis 2008; Kheifets et al. 2006; Raz 2006; SCENIHR 2008; Singh et al. 2008). These studies focused on the health implications to human beings living near high-voltage transmission lines, from 115 kV and above. EMF sources of exposure, however, varied in these studies, from power transmission lines to electric toothbrushes. The adverse health effects reported in these studies varied as well, from headaches to insomnia to behavioral disorders (Genuis 2008). One study published in the British Medical Journal (Draper et al. 2005) studied the occurrence of childhood leukemia as a function of distance from power distribution lines. The study concluded that children living within 600 meters (1,800 feet) were statistically more likely to have leukemia than those living father away from the power lines. The study also concluded that children living even

closer (200 meters or 600 feet) were at an increased risk of childhood leukemia. One study (Tenenbaum 2000) has postulated that the reason ELF EMF has been implicated in various forms of cancer is because the EMF exposure can induce cancer in cells within the body that have already been mutated by other means. These studies have been called into question based on the scientific design and the magnitude of the statistical significance.

A similar study to the Draper research that was conducted in Russia in 2003 (Tikhonova et al. 2003) found no statistically significant adverse health effects linked to living close to power transmission lines. In addition, most EMF research investigating the potential effect of power lines on human beings has been conducted outside the United States, either in Europe or Asia. Because this research is conducted in regions where 50 Hz power is used (versus 60 Hz power in the United States), these studies may not be applicable to the United States. Very limited research has been conducted within the United States on power line EMF and health effects.

Based on Type of Health Effects Studied

The literature and Internet contain myriad reports of adverse health effects of EMF exposure. The casual reader can find reports claiming that EMF exposure can cause anything from rashes to cancer, and everything in between. In order to make an informed decision, readers must be aware of certain caveats when reading any literature relating to EMFs.

1. First, consider the source. Anyone can publish anything on the Internet. This makes Internet sources suspect, unless the source is a reputable authority on the subject, such as the World Health Organization (WHO) or the ICNIRP. Likewise, not all scientific journals are of the same caliber. Some journals, such as the *Journal of Physical Chemistry*, have stringent requirements for publication as well as a rigorous peer-review system to ensure the validity and quality of the articles published. Other journals, such as *Electric Power Systems Research*, have different standards.
2. Any research should be based on sound scientific principles, control for all variables, and have an experimental design that includes a study and control group.
3. All reliable research is repeatable. If a study reports findings that cannot be verified by an independent group, the results and conclusions are suspect.
4. A large sample size helps to ensure the applicability of the results. In other words, a small sample size (20 people or less, for example) makes the results and conclusions of the study difficult to generalize to the entire human population. Similarly, anecdotal evidence from one person may be relevant to that one person only, and not to the entire human population. On the other hand, the larger the sample size (300 or more people, for example), the more applicable the results may be to a similar population.

Given these caveats, only reliable literature sources were consulted and sited in this assessment. Based on a thorough review and evaluation of reliable scientific research, analyses, and reports, the ICNIRP (2001) concluded that a weak association exists between childhood leukemia and exposure to ELF EMF. The ICNIRP also evaluated the current research related to EMF exposure and the following health effects (ICNIRP 2001):

1. Childhood cancer
2. Adult leukemia
3. Brain tumors
4. Breast cancer
5. Cardiovascular disease
6. Neurological disorders (depression and suicide)

Based on their review, the ICNIRP (2001) concluded that insufficient reliable research exists to determine if a link is possible between the adverse health effects above and long-term, elevated EMF exposure. The ICNIRP stated that more research is necessary in these areas.

Note that although case studies are not applicable (n/a) to the entire population, the European Union has acknowledged that a certain portion of the population may be susceptible to a disorder called "EMF hypersensitivity" (World Health Organization 2004). Such individuals appear to suffer adverse health effects from exposure to much smaller EMF doses than the general population. There is much scrutiny of this condition in general, with many scientists suggesting that the root cause of the problem is not EMF, but something else. Because of this, EMF hypersensitivity is not acknowledged within the United States.

The U.S. National Institutes of Health tasked the National Institute of Environmental Health Sciences (NIEHS) with studying and making recommendations on EMF and human health. NIEHS has put out a series of reports outlining their interpretations and recommendations (NIEHS 1998, 1999a and b; 2002). The NIEHS concludes that for most health outcomes, there is no evidence that EMF exposures have adverse health effects. The NIEHS calls for more studies and continued education on ways of reducing exposures.

3.7.2.5 Electromagnetic Fields in Context

Not all EMFs raise health concerns. In fact, the Earth has a natural magnetic field that human beings are constantly exposed to. The strength of the Earth's field ranges from less than 30 μT (0.3 G) to over 60 μT (0.6 G). In Buckeye, Arizona, the total magnetic field is approximately 0.33 Gauss (33 μT), according to the National Geophysical Data Center (2011).

In a study that measured EMF exposure in 1,000 homes in the United States, 50 percent had average EMF levels of 0.6 mG (0.06 μT) or less, and 95 percent had average EMF levels below 3 mG (0.3 μT) (Connecticut Department of Public Health 2008).

Many everyday electrical objects emit relatively high EMFs when turned on, but the ICNIRP has determined that these items are not responsible for causing health problems (ICNIRP 2001). Some of these values exceed the ICNIRP standard, but the devices are still considered safe. **Table 3.7-6** illustrates the magnitude that some common electrical devices are capable of outputting (EMF-Link 2000).

Table 3.7-6 Example EMF Sources

SOURCE	MAGNETIC FIELD 6 INCHES AWAY (µT)
Microwave Oven	30
Mixer	60
Hair Dryer	70
Vacuum Cleaner	70
Can Opener	150

3.7.2.6 Electromagnetic Fields and Transmission Lines

Of particular relevance to this Project is a research study conducted in Arizona of the EMF generated by two existing 69kV power substations in the Phoenix area for the Salt River Project. The study evaluated EMF levels within the substation as well as in adjacent residential areas. The study (Ma et al. 2011) found that all EMF levels were below both IEEE and ICNIRP recommended levels.

The Environmental Law Centre (Wu 2005) compiled a relevant review and summary of international precedents related to EMFs and power transmission lines. The document was meant as a quick resource for attorneys; however, the document is written in "plain English" and, as such, provides a relatively thorough summary of all regulations around the world.

A study of the ELF EMF exposure in residential settings outside the ROW of power transmission lines in Malaysia (Tukimin et al. 2007) documented that the ELF EMF strengths for both electric and magnetic fields were well below ICNIRP recommendations: the maximum field strength that the study observed was less than 60 percent of the ICNIRP standard. Similarly, Rahman et al. (2009) documented low electric and magnetic fields at the edge of the ROW for a variety of pole configurations in India.

Similarly, a study of EMF strength in power substations in Egypt (Hossum-Eldin 2010) found that EMF values within the substation were generally at or below the public exposure limit, except immediately around the transformers. Additionally, a study in Kuwait attempted to simulate the ELF EMF experienced by a car travelling near power transmission lines (Al-Sayegh and Qabazard 2007). The study stated that the EMF level for a car approximately 200 feet from a 260 megawatt power transmission line was approximately 70 mG. This level was simulated at the lowest sag of the transmission lines. Note that this level is well under the ICNIRP recommended limit. However, the study did note that additional simulation and refinement of the model were needed.

3.7.2.7 Electromagnetic Fields and the Project

EMF Levels

Based on EMF data models prepared in 2008 for the APS Application for a CEC (URS 2008), **Table 3.7-7** compares the modeled EMF levels for the Study Area with ICNIRP recommended limits. While the data for the Application were not created for this specific Project, the overall set-up and load on the transmission lines for this Project is expected to be similar. Therefore, these data were used as the basis of comparison. However, future EMF data models for this specific Project may result in slightly different values.

ICNIRP was chosen as the basis of comparison because the ICNIRP limits are used internationally and are relatively conservative limits compared to the IEEE limits. The "Distance From Structure" is the distance from the nearest transmission line to the edge of the ROW, taken off the modeled data from the 2008 report. Both the electric and magnetic field components are summarized.

Table 3.7-7 Comparison of APS Projected EMFs to ICNIRP Limits

SECTION	DISTANCE FROM STRUCTURE (FEET)	EXPECTED E FIELD (KV/M)	EXPECTED MAGNETIC FIELD (MG)
1 – Paralleling Planned West Valley North 230kV Project	50	0.25	8
2 – Paralleling Existing Mead-Phoenix 500kV Line	100	2	20
3 – No other Paralleling Lines	60	1.5	9
ICNIRP (2010) Public Limits at 60 Hz		*4.17*	*2,000*

The Proposed Action route would cross several existing power transmission lines (URS 2012e), including the:

- Mead-Phoenix 500kV line,
- 69kV line along Patton Road,
- 69kV line along US 60,
- Western Area Power Administration Raceway – Waddell 230kV line, and
- 69kV line west of Morgan Substation.

As stated previously, EMFs from multiple sources have the potential to act by either cancelling each other out, thereby minimizing the EMF in the surrounding area, or by adding together, thereby increasing the EMF in the surrounding area.

3.7.2.8 Summary

The ICNIRP acknowledges a weak association between high EMF exposure and childhood leukemia. The ICNIRP concluded that insufficient evidence exists to link EMF exposure to any other health effects. Note that the health effects studies reviewed by the ICNIRP focused primarily on the magnetic field portion of EMF, not the electric fields.

Based upon the technical research, the ICNIRP has made a series of recommendations for limiting EMF exposure to human beings: public exposure for electric fields should be limited to 4.17 kV/m and magnetic fields should be limited to 2,000 mG (200 mT) (ICNIRP 2010). While the guidelines are voluntary, the levels are designed to prevent undue health risks associated with EMF exposure.

Based on modeling prepared for the APS Application for a CEC (URS 2008), EMF data were compared to the ICNIRP standards. The magnetic and electric fields at the edge of the ROW were all substantially below the ICNIRP public exposure limits.

3.7.3 Fire

This section provides information on fire and fuels management as it relates to the Project. The Study Area for the assessment of fire and fuels management includes the lands within and adjacent to the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes (including access roads [temporary and permanent], staging areas, etc.). A portion of the Study Area is located within the Castle Hot Springs Management Unit of the Bradshaw-Harquahala Planning Area on BLM-managed lands. It was determined that the best area to focus the assessment of fire and fuels management for this Project would be the BLM Phoenix District Fire Management Unit 2 (FMU 2; BLM 2009b). This FMU encompasses all lands within its boundary and is not specific to BLM. The jurisdiction of other lands within FMU 2 (the Study Area) includes State Trust lands, private, U.S. Forest Service, USBR, and a small portion of Indian lands in the southeast portion of the FMU. The entire FMU is approximately 718,229 acres (BLM 2009b). Only BLM, State Trust, private, or USBR lands are likely to be affected by the Proposed Action route and the Action Alternatives.

The Study Area falls within Arizona land use allocation 2: Initial Action is Suppression (areas not suitable for managing fire to achieve resource objectives) (BLM 2010a). These lands are not typically fire adapted, and using wildfire to meet resource objectives is not an appropriate action on these lands. This allocation includes areas where mitigation and suppression are required to prevent direct threats to life or property (BLM 2010a). The present BLM policy is to maintain full fire suppression in all land use allocation 2 areas (BLM 2010a).

The Study Area is located within the Sonoran Basin and Range Ecoregion of Arizona. This ecoregion is similar in topography to the Mojave Basin and Range to the north. However, the Sonoran Basin and Range is slightly hotter than the Mojave and contains large areas of palo verde-cactus shrub and giant saguaro cactus (EPA 2010a). Winter rainfall decreases from west to east, while summer rainfall decreases from east to west. The Sonoran Desert Ecoregion is characterized by an arid climate. Annual precipitation varies from 3 to 10 inches with slightly more rainfall at the higher elevations. Winters are mild while summers are hot

and dry. The two main periods of rainfall occur during the last half of summer and in early winter.

The following subsections serve to provide a picture of the existing fire conditions in the Study Area and develop a basis for the fire management impact analysis.

3.7.3.1 Laws, Ordinances, Regulations, and Standards

The BLM coordinates its fire management activities with the actions of related federal and state agencies responsible for fire management. The 1995 Federal Wildland Fire Policy is a collaborative effort that includes the BLM, U.S. Forest Service, National Park Service, US FWS, Bureau of Indian Affairs, the National Biological Service, and state wildfire management organizations (DOI 1995). The 1995 policy has undergone several reviews and additional guidance and policy has been developed based on those reviews. The BLM is currently following fire management guidance provided in the Guidance for Implementation of Federal Wildland Fire Management Policy (DOI 2009b). The BLM also addresses fire management issues in fire management plans and resource management plans, including: the 2009 Phoenix District Fire Management Plan (BLM 2009b), and the Bradshaw-Harquahala RMP (BLM 2010a).

3.7.3.2 Fire History and Data

Fire has not historically played a large role in the development and maintenance of the ecosystem in this Study Area (see **Figure 3.7-1**) and the fire return intervals (i.e., the length of time between wildland fires occurring in a specific area) have been very long. This area also includes wildland-urban interface (WUI) areas, where an unplanned ignition could have negative effects to the ecosystem unless some form of mitigation takes place. Mitigation could include several different means to reduce the hazardous effects of unplanned wildland fires, including: mechanical, biological, chemical, or prescribed fire (BLM 2010a).

The following fire history data are taken from the 1980-2009 records of fire events that occurred within five miles of the Project routes (not within 5 miles of the FMU). During this period, 39 separate fires burned a total of 1,359 acres. Fire extents have been highly variable, ranging from zero acres in years when fire was completely absent, to 1,223 acres during 1983. The average number of acres burned per year in the area from 1980 to 2009 was 35 acres. These figures reflect all burned acres, regardless of land ownership or jurisdiction.

3.7.3.3 Fuel Types

Various vegetation communities make up the fuel components of the Study Area. Vegetation communities are described in the URS Environmental Resource Report for Biological Resources (URS 2012i), but generally fall into Fire Behavior Prediction System (FBPS) Fuel Model GR1, and National Fire Danger Rating System (NFDRS) Fuel Model A (BLM 2009b). Fuel models utilize the physical characteristics of a plant community to characterize and predict fire behavior. Fuel Model GR1 is described by Scott and Burgan (2005), and Fuel Model A is described by Schlobohm and Brain (2002). The two fuel models are summarized below:

<u>FBPS Fuel Model GR1 (Short, Sparse Dry Climate Grasses)</u> - The primary carrier of fire in GR1 is sparse grass; though small amounts of fine dead duel may be present. The grass in

GR1 is generally short, either naturally or by grazing, and may be sparse or discontinuous. The moisture content of the fuel is very low and indicative of a dry climate.

NFDRS Fuel Model A (Annuals) - This fuel model represents western grasslands vegetated by annual grasses and forbs. Brush or trees may be present but are very sparse, occupying less than one-third of the area. The quantity and continuity of the ground fuels can vary greatly with rainfall from year to year.

3.7.3.4 Fire Regimes

Fire regimes associated with the major vegetation cover types within the Study Area have been documented in terms of fire frequency (i.e., the number of years between fires in the same area) and fire severity (i.e., percent of dominant overstory vegetation removed). This Study Area is primarily vegetated with Sonoran Desert scrub and is classified as being within Fire Regime III. Fires historically occur every 35 to 100+ years under Fire Regime III and the severity of the fires is mixed. Each Fire Regime can be further separated into Condition Classes, which are discussed further in the following section.

3.7.3.5 Fire Regime Condition Class

National and state BLM fire policy requires current and desired resource conditions related to fire management be described in terms of three condition classes. These condition classifications are referred to as Fire Regime Condition Classes. A Condition Class is a classification of the amount of departure from the historic fire regime (which was discussed previously). Following is a description of the two condition classes that are present within FMU 2. The fire regimes and the condition classes were determined using Landfire data (Landfire 2012).

Condition Class 1 – Fire regimes in this class are within the historical range. The risk of losing key ecosystem components from the occurrence of fire remains relatively low. Maintenance management such as prescribed fire, mechanical treatments, or preventing the invasion of non-native species, is required to prevent these lands from becoming degraded. Low elevation (below 2,000 feet) areas within this unit are primarily Condition Class 1 (BLM 2009b).

Condition Class 2 – Fire regimes in this class have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified on these lands. To restore their historic fire regime, the lands may require some level of restoration through prescribed fire, mechanical or chemical treatments, and subsequent reintroduction of native plants. Most of the areas above 2,000 feet in elevation within this FMU are now in Condition Class 2 (BLM 2009b) due to the presence of exotic annual grasses in upland areas and saltcedar/tamarisk along riparian corridors.

Figure 3.7-2 shows the distribution of the condition classes in the Study Area.

3.7.3.6 Fire Management

Fire management utilizes an integrated approach to reduce the danger to firefighters, improve the productivity of public lands, protect public and private property from devastating fire and, over the long term, reduce fire suppression costs. Fire management integrates five main components as follows:

General Fire Management – National Fire Plan. The National Fire Plan is not a singular document, but rather a compilation of concepts, documents, and policies which guide fire management and began with the Federal Wildland Fire Management Policy and Program (DOI 1995a). Firefighter and public safety is the first priority in all fire management and suppression actions.

Fuels Management – Includes hazardous fuels reduction, prescribed fire, and fuels management.

Fire Prevention – Includes education, community assistance, and prevention programs.

Fire Suppression – Composed of preparedness, the mobilization and management of fire suppression crews for fire suppression, and the actual suppression of fires.

Fire Rehabilitation – Includes emergency stabilization and rehabilitation efforts in the post fire environment to reduce hazards to the public and ecosystem values. Rehabilitation efforts are generally undertaken in the post-fire environment to protect and sustain ecosystems, public health and safety, and to help communities protect infrastructure. Typical efforts involve soil stabilization, flood control, and rehabilitation of vegetation structure and function in an attempt to keep cheat grass and other undesirable plants out of disturbed areas.

According to the Bradshaw-Harquahala ROD the lands within the Study Area are not fire adapted and unplanned ignitions should be suppressed (BLM 2010a). Vegetation types in the Study Area are not considered dependent on, or even adapted to, fire. The vegetation in this area (saguaro cactus, palo verde, organ pipe cactus, and creosote) could take as long as a century to reestablish after a fire.

There are several communities (i.e., towns and cities) within the FMU boundaries. There are also recreation sites, range improvements, railways, roadways, utility lines, substations and communication sites in the FMU. Communities and infrastructure associated with these features can make fire suppression activities more difficult and dangerous for firefighting personnel. As part of community protection and community assistance programs, the BLM utilizes local news media to provide information and updates to the public. The BLM also may participate in school presentations, attend events/parades, and develop partnerships with homeowner organizations, permittees, and other groups to assist communities in reducing the risk from wildfire through public awareness (BLM 2009b).

Suppression strategies and tactics in this FMU usually involve direct attack on wild fires using hand crews, engines where possible, and aerial support to knock down the fire edge. As a result, fires in this area are usually quickly contained.

3.8 PALEONTOLOGY

The information provided in the following subsections is taken from a report titled *Environmental Resource Report for Paleontology, Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012f). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review.

Paleontological resources are fossilized remains of past life including invertebrate and vertebrate animals and multi-cellular plants, including imprints. These resources are non-renewable and therefore are considered sensitive. Due to their paucity, fossils are important records of ancient life, particularly vertebrate fossils.

The Study Area covered by the paleontological records search included a one-mile buffer around the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes. In general, any paleontological resources known for Maricopa County were also compiled. The paleontological assessment for the Study Area was based on a review of data gathered from the Arizona Geological Survey, the USGS, the Arizona Museum of Natural History, and paleontological and geologic literature. No site visit was conducted.

3.8.1 Laws, Ordinances, Regulations, and Standards

Protections of paleontological resources are provided under federal legislation which requires federal agencies to take into consideration surface disturbing federal actions that may cause direct adverse impacts to paleontological resources through the damage or destruction of fossils or the disturbance of the stratigraphic context in which they are located. Indirect adverse impacts may be created from increased accessibility to fossils leading to looting or vandalism activities. Under FLPMA and NEPA, federal actions and land tenure adjustments that may impact or result in a loss of paleontological resources are evaluated, and necessary mitigation is identified. As the footprint of the Project includes federal lands, the following federal laws will apply to the paleontological resources within the Project footprint.

Antiquities Act of 1906 - The Antiquities Act of 1906 has historically been used as the basis for federal protection of paleontological resources on federal lands. The act authorizes the government to regulate the disturbance of objects of antiquity on federal lands through the responsible managing agency and to prosecute individuals responsible for the unauthorized damage or removal of such objects.

National Environmental Policy Act of 1969 - NEPA establishes a public, interdisciplinary framework for federal agencies reviewing projects under their jurisdiction to consider environmental impacts. NEPA's basic policy is to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment.

Federal Land Policy Management Act of 1976 - The FLPMA of 1976 (P.L. 94-579; 90 Stat. 2743, USC §§ 1701-1782) requires that public lands be managed in a manner that protects the quality of their scientific values.

Paleontological Resources Preservation Act of 2009 - The most explicit federal protection for paleontological resources, enacted in 2009, is the Paleontological Resources Preservation Act. This act regulates who may collect fossils on public lands and where such fossils must be curated. It also provides for prosecution of violators.

Bureau of Land Management Instruction Memorandum 2009-11 - This Instruction Memorandum (IM) provides guidelines for assessing potential impacts to paleontological resources in order to determine mitigation steps for federal actions on public lands under FLPMA and NEPA. These guidelines also apply where a federal action impacts split-estate lands. In addition, this IM provides field survey and monitoring procedures to help minimize impacts to paleontological resources from federal actions in the case where it is determined that significant paleontological resources will be adversely affected by a federal action.

3.8.2 Study Area Conditions

The Study Area lies in the Basin and Range geologic province within Arizona (Wilson and Moore 1959; Anderson et al. 1992). The basins in the Arizona portion of the Basin and Range province were created by structural disturbances between 15 and 10 million years ago (Anderson 1995). Minimal detailed geologic mapping exists for the area. Wilson et al. (1957) mapped the entire county of Maricopa and showed the Study Area to be largely Quaternary and Tertiary sand, gravel, and conglomerate with the ACC-certificated route passing through Precambrian schist and Quaternary basalt near its eastern end. Anderson et al. (1992) mapped the area as being mostly middle Tertiary and younger sediments with some middle Tertiary crystalline rocks and some middle Tertiary and younger volcanic rocks toward the east end. Huckleberry (1994) mapped the Wittmann and Hieroglyphic Mountains Southwest 7.5' quadrangles at a 1:24,000 scale. Where the Project crosses those quadrangles, the sediments are relatively young alluvial fans, very young Pleistocene fans, and older Pleistocene fan surfaces. Pearthree et al. (2004) mapped the Daggs Tank 7.5' quadrangle at a 1:24,000 scale. Where the Project crosses that quadrangle, the sediments are Holocene alluvium, early Pleistocene river deposits, and Plio-Pleistocene river deposits.

3.8.3 Paleontological Potential

Assessment of paleontological data was made using the Society of Vertebrate Paleontology Assessment of the Paleontological Potential of Rock Units, the Potential Fossil Yield Classification (PFYC) system and through a review of the published and unpublished paleontological literature for the region (McCord 2011). The determination of a site's (or rock unit's) degree of paleontological potential, according to the Society of Vertebrate Paleontology (SVP 1995), is first founded on a review of pertinent geological and paleontological literature and on locality records of specimens deposited in institutions. This preliminary review may suggest particular areas of known high potential. If an area of high potential cannot be delimited from the literature search and specimen records, a surface survey would determine the fossiliferous potential and extent of the sedimentary units within a specific project. The field survey may extend outside the defined project to areas where rock units are better exposed. If an area is determined to have a high potential for containing paleontologic resources, a program to mitigate impacts is developed. In areas of high sensitivity, a pre-excavation survey prior to excavation is recommended to locate surface

concentrations of fossils which might need special salvage methods. The sensitivity of rock units in which fossils occur may be divided into three operational categories:

High Potential - Rock units from which vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered are considered to have a potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to sedimentary formations and some volcanic formations which contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or botanical; and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas which contain potentially datable organic remains older than Recent (usually used as synonymous with Holocene Epoch, which is generally regarded as having begun 10,000 radiocarbon years, or the last 11,500 calibrated (i.e. calendar years, before present (1950)), including deposits associated with nests or middens, and areas which may contain new vertebrate deposits, traces, or trackways are also classified as significant.

Undetermined Potential - Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

Low Potential - Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils. Such units will be poorly represented by specimens in institutional collections. These deposits generally will not require protection or salvage operations.

The PFYC is a system for categorizing the probability of geologic units to contain scientifically significant paleontological resources or noteworthy fossil occurrences. It has five levels or Classes, with Class 1 applied to geologic units that are not likely to contain significant fossils through Class 5 for geologic formations that have a high potential to yield scientifically significant fossils on a regular basis.

If the results of the preliminary analysis determine that a project will only affect geologic units not likely to contain significant fossils or that have a very low or low potential for significant fossils (PFYC Class 1 or 2), and no scientifically important localities are known to occur in the area, the project file should be documented, and no additional paleontology assessment is necessary.

The results of an analysis of a project may indicate the potential to disturb PFYC Class 3, 4, or 5 formations or potentially fossil-bearing alluvium, or known significant localities, which may then suggest the need for field surveys and/or other mitigation measures. The results may also identify areas where little or nothing is known of the fossil record so that additional attention may be given to these areas during field survey. The analysis should consider the

likely impacts on the known or potential fossil resource and should be the basis for determining the need for or level of additional assessment.

Project Area Potential

Geologic mapping of the area (Wilson et al. 1957) indicate that the only potentially fossiliferous deposits in the area to be Quaternary and Tertiary gravels, sand, and silts. These deposits are not typically productive with surface deposits, but some localities in eastern Maricopa County (Lindsay and Tessman 1974; Mead 2005) have produced Pleistocene faunas where down-cutting or excavation has occurred.

The paleontological potential of the Precambrian schist and Quaternary basalt in the eastern portion of the Study Area is low in the Society of Vertebrate Paleontology system; in terms of the PFYC system, these would be rated Class 1 – very low. The paleontological records search report suggests that surficial sediments are unlikely to produce paleontological resources, but that deeper sediments are more sensitive. At least in the active drainages, the surficial sediments would be geologically young. In terms of the Society of Vertebrate Paleontology system, their sensitivity would be rated low; in terms of the PFYC system, they would rated Class 2 – low. Given that some of the sediments which the Proposed Action route and other Action Alternatives would cross are middle Tertiary age or younger, and that several vertebrate fossils of Pleistocene and possibly Pliocene age are known from Maricopa County, the paleontological potential of these Pleistocene and Pliocene sediments should be regarded as unknown until other sources of evidence, such as a systematic survey (which is not required for this project), can be obtained. In the PFYC system, they would be rated Class 3 – moderate or unknown.

3.8.4 Known Paleontological Resources

Four publications dealt with known paleontological sources near the Project. The publications of paleontological resources in the Study Area seem to have been prompted by individual scientists' research interests or chance finds. Lindsay and Tessman (1974) recorded an oreodont from Oligocene deposits in eastern Maricopa County. There are no other Paleogene vertebrate fossils recorded for the county (Lucas and Morgan 2005a). Morgan and White (2005) showed no Miocene or Pliocene vertebrate fossil localities in Maricopa County. Mead (2005) showed no Late Pleistocene reptile or amphibian records from Maricopa County. However, McCord (1994) listed three Pleistocene records of the Bolson tortoise (*Gopherus flavomarginatus*) from between the Salt and Agua Fria Rivers near Phoenix. The El Mirage locality is 12 miles south of the Project near the Morgan Substation. The Las Colina locality is 31 to 42 miles to the southeast, and the Lehi record is 38 to 51 miles southeast of the Project. Lucas and Morgan (2005b) listed two Pleistocene mammal localities from eastern Maricopa County. Pasenko (2007) described the cranium of a *Stegomastodon* (a gomphotherium proboscidean) from "north of Morristown" which is within 5 miles of the nearest portion of the Project. The specimen is problematic because where the specimen was collected is not definitively known. Pasenko concluded that it was of late Pliocene or early Pleistocene age.

The results of the paleontological records search were provided by Dr. Robert McCord (2011). That report incorporates information from the AZMNH, the Museum of Northern Arizona (MNA), the collection of the Northern Arizona University Quaternary Studies

Program (a former Northern Arizona University collection, recently transferred to AZMNH), and the University of Arizona. The report included information on an unpublished record of *Gopherus* from Peoria, 15 miles south of the eastern end of the Project near Morgan Substation. The paleontological records search report concludes that there are no known vertebrate fossil localities within one mile of the Project Area.

3.9 RECREATION AND SPECIAL DESIGNATIONS

Portions of the information provided in the following subsections is taken from a report titled *Environmental Resource Report for Land Use, Recreation and Special Designations, Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012a). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review. The information taken from the resource report has been supplemented with additional research.

The Study Area boundary for recreation and special designations includes a two mile area surrounding the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes (**Figure 3.9-1**). Although direct effects related to construction would likely occur within 500 feet of the routes, a broader area (out to two miles from the routes) was chosen to be consistent with what was considered in the CEC application. The following sections discuss relevant laws and regulations, recreation, and special designations within the Study Area and surrounding vicinity.

3.9.1 Laws, Ordinances, Regulations, and Standards

The Action Alternatives would traverse federal, state, and local agency jurisdictions that have adopted land use plans and regulations which guide the type and intensity of land use (see **Figure 3.6-1**). **Section 3.6 - Land Use and Range Resources**, provides a discussion of the laws, ordinances, regulations, and standards that includes those applicable to recreation and special designations.

3.9.2 Recreation Overview

Both developed and undeveloped recreational uses are located within the Study Area. Developed recreational opportunities are provided by three golf courses (located within residential communities), regional and neighborhood parks/playgrounds, campground/picnic facilities, recreational trails, rodeo arenas, a paintball facility, a soaring school/glider port, and a designated OHV staging area. With exception of the designated OHV staging area, the developed recreational opportunities in the Study Area would be largely unaffected by the proposed Project, and are therefore not discussed in detail in this document. Undeveloped recreational opportunities include hiking, geocaching, mountain biking, horseback riding, hunting, wildlife viewing, target shooting, and dispersed OHV use. Heavy, dispersed, undeveloped recreational activity occurring north of SR 74 would be impacted by the proposed Project, and is therefore the focus of this section.

3.9.3 Recreation Management

3.9.3.1 Bureau of Land Management

Recreation Opportunity Spectrum

The BLM uses a planning tool known as the Recreation Opportunity Spectrum (ROS) that inventories, classifies, and maps public lands according to their suitability for various types of recreational activity based on the presence of physical setting characteristics. The system defines six classes of recreation opportunity ranging from natural, low-use areas to highly developed, intensive use areas: these include Primitive, Semi-Primitive Non-Motorized, Semi-Primitive Motorized, Roaded Natural, Rural, and Urban. The classes are defined by setting, the types of recreational activities appropriate to that setting, and the types of recreation experience the setting offers to visitors. BLM-managed lands within two miles of the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes contain the three ROS classes (**Figure 3.9-1**) described below.

Semi-primitive motorized - This setting is a mostly natural landscape of moderate to large scale, within one-half mile of primitive roads and two-track vehicle trails. The setting offers a moderate degree of isolation from others; contact with others remains low to moderate and there are few management controls. The use of motorized recreational equipment is allowed. Recreationists can experience a high degree of interaction with the natural environment while enjoying activities such as hunting, climbing, vehicle trail riding, backcountry driving, mountain biking, and hiking.

Roaded Natural - This setting consists of areas near improved and maintained roads. While these areas are mostly natural in appearance, some human modifications are evident, with moderate numbers of people, visible management controls, and developments. Activities include wood gathering, downhill skiing, fishing, off-highway vehicle driving, interpretive uses, picnicking, and vehicle camping. The experience provides for a sense of security through the moderate number of visitors and developments, and some personal risk-taking and challenges.

Rural - This setting is characterized by a substantially modified natural environment. Resource modification, development, and use are obvious. Human presence is readily evident, and interaction between users is often moderate to high. Activities consist mostly of facility/vehicle dependent recreation and generally include vehicle sightseeing, horseback riding, on-road biking, golf, swimming, picnicking, and outdoor games. The experience provides for modern visitor conveniences, moderate to high levels of interactions with others, and a feeling of security from personal risk.

Special Recreation Management Areas

BLM designates SRMAs to help direct management priorities in areas with a high amount of recreational activity and increased resource values and public concern. There are two SRMAs located near the Study Area and one located within two miles of the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes.

The southern portion of the Castle Hot Springs SRMA (112,430 acres) is located within the Study Area and is located mainly north of SR 74 and west of Lake Pleasant Regional Park (**Figure 3.9-2**) although it does extend south of SR 74 on the public land paralleling SR 74.

The SRMA contains the Hieroglyphic Mountains RMZ (16,510 acres), Sheep Mountain RMZ (4,270 acres), and the Baldy Mountain RMZ (6,550 acres). The Castle Hot Springs SRMA is managed for motorized and non-motorized recreation and provides opportunities for developed camping, OHV use with single- and two-track routes for general motorized recreation use, and organized OHV events, horseback riding, bicycling, hiking, and picnicking.

The Black Canyon SRMA (68,730 acres) is located approximately two miles northeast of the Study Area (**Figure 3.9-2**). The SRMA contains the Black Canyon Hiking and Equestrian RMZ (8,325 acres) and the Table Mesa RMZ (11,050 acres). The Black Canyon SRMA contains the Black Canyon National Recreation Trail which provides high quality non-motorized recreation opportunities for hikers, equestrians, and mountain bikers through the Black Canyon Corridor. The Table Mesa RMZ provides for intensive motorized recreation in Semi-primitive to Roaded Natural recreation settings.

The Hassayampa SRMA (181,910 acres) is located approximately two miles northwest of the Study Area (**Figure 3.9-2**) and contains the Stanton (6,050 acres), Wickenburg Community, Box (72,040 acres), San Domingo (16,040 acres), and Vulture Mine (30,100 acres) RMZs. Recreation opportunities within the Hassayampa SRMA include hiking, horseback riding, picnicking, camping, mountain biking, and OHV use.

Special Recreation Permits

BLM issues Special Recreation Permits (SRPs) for commercial and competitive uses, organized group events and activities, and vending operations conducted on public lands. The permits can be for one-time events, such as an OHV race or horse ride, or for on-going commercial uses such as jeep tours. BLM issues SRPs on a case-by-case basis.

In areas near and north of the Study Area, the BLM issues SRPs for horse trail rides, competitive motorized and non-motorized events, orienteering, OHV tours, and permits for outfitter and guide activities such as big game hunting (BLM 2010a). BLM has issued 18 commercial permits and 3 competitive permits in the Study Area (BLM Outdoor Recreation Planner, personal communication, January 26, 2012).

Special Designations

There are no BLM special designations within the Study Area.

3.9.3.2 Other Entities

State of Arizona

The Statewide Planning Unit of Arizona State Parks prepared the 2008 Arizona State Comprehensive Outdoor Recreation Plan (SCORP). The SCORP is Arizona's outdoor recreation policy plan. It is intended to guide outdoor recreation managers and decision-makers on policy and funding issues and is updated every five years. The BLM was represented on the 2008 SCORP Workgroup, which served as the steering committee for the SCORP planning process and drafted the grant rating criteria for the federal Land and Water Conservation Fund (LWCF) and the Arizona Heritage Fund Local, Regional and State Parks grant programs. The SCORP is prepared in accordance with the provisions of the LWCF Act, which was enacted in 1964 to encourage the provision of greater recreation opportunities for

American citizens. Arizona receives annual congressional appropriations from LWCF administered through the Arizona State Parks Board to fund state and local government sponsored outdoor recreation projects. Two key uses of the SCORP, as they relate to the proposed Project are:

- Establish outdoor recreation priorities for Arizona that will help outdoor recreation and natural resource managers at all levels of government, the state legislature, and the executive branch make decisions about the state's outdoor recreation sites, programs and infrastructure.
- Encourage a better, highly integrated outdoor recreation system throughout Arizona that balances recreation and protection of natural and cultural resources. (Arizona State Parks 2007).

Arizona's SCORP identifies outdoor recreation issues of statewide importance based upon, but not limited to, input from the public. The State identified nine priority issues for outdoor recreation in Arizona of which the following three would be applicable to the proposed Project:

- Plan for Growth/Secure Open Space - As Arizona's population increases, the demand for recreational opportunities and open space grows, but the land to provide those opportunities is decreasing due to changing land uses and explosive residential and commercial development. State Trust land is a key variable for Arizona's growth. Identifying key lands and their access points and acquiring them before development should be an integral part of growth planning, providing a foundation for parks and other outdoor recreation facilities, open space and natural areas, and is typically less expensive than acquiring them later.

  Goal: The goal is "Smart Growth;" *growing smarter* is about creating and sustaining healthy landscapes, livable communities and vibrant economies. This type of proactive planning is to ensure Arizona's desirability as a place that combines incredible resources with a dynamic economy, through integration of quality of life with quality growth in our everyday lives and expectations for future growth and development.

  Action Strategies that apply to the proposed Project:

  2. Look holistically across geographic boundaries, disciplines, governments, private interests, and generations, and examine all benefits and costs, not just fiscal costs.

  4. Do proactive and visionary planning, not just react to situations as they become critical.

  6. Determine the type, size and condition of the lands needed for parks and open space before enacting planning and zoning policies, ordinances or development set-asides.

- Resolve Conflicts - As the sheer numbers of recreationists increase and demand for different activities grows, managing the resource impacts and conflicts that develop between these uses will become an increasingly important issue of public policy.

Goal: The goal is implementing a well-planned balance of land uses including recreational opportunities that adhere to set carrying capacities and result in harmonious interactions between recreational users and between landowners and recreationists, and, protected and sustainable natural and cultural resources.

Action Strategies:

2. Proactively involve all affected parties when deciding on strategies to resolve conflicts.

8. Provide for OHV use on public lands but manage it properly, to reduce conflicts with other recreation users and minimize the activity's impacts on natural and cultural resources, as is done for other recreational activities.

- Fill Gaps between Supply and Demand - Increasing population, rapid development and leapfrog communities are expanding towns and cities ahead of their ability to provide necessary infrastructure and desired amenities such as parks, trails and open space.

  Goal: The goal is to expand and improve the range, quality and quantity of outdoor recreation opportunities in local communities and throughout Arizona that meet the needs of Arizona's diverse residents and visitors.

  Action Strategies:

  4. State and federal agencies should implement coordinated interagency planning efforts for new recreational areas and trail systems to ensure an equitable regional distribution of desired recreational opportunities and access to natural environments.

Maricopa County Parks and Recreation Department

Maricopa County Parks and Recreation Department manages the United States' largest county park system, with 10 regional parks totaling approximately 120,000 acres. A combination of leased and purchased land has allowed Maricopa County to develop a regional park system that preserves natural open spaces. The park system provides residents with the opportunity to enjoy natural and cultural resources and to participate in a variety of recreational activities. White Tank Mountain and Lake Pleasant Regional Parks are located closest to the Study Area.

Lake Pleasant Regional Park is located 15 miles west of Interstate 17 on SR 74, 30 miles from Phoenix and within the city limits of Peoria. It is located in the northeast portion of the Study Area and just south of the Yavapai/Maricopa County boundary. The park is accessed from SR 74 via Castle Hot Springs Road. The park is extremely popular for boating, fishing, water skiing, jet skiing, sailing, and other water sports, and contains developed campgrounds. White Tank Mountain Regional Park is located north of the Town of Buckeye, east of the City of Surprise, and southwest of the Study Area, and encompasses approximately 30,000 acres. A portion of the Maricopa Trail which is part of the Maricopa County Regional Trail Plan is located within the Study Area. The trail begins at the Agua Fria trailhead located approximately 1.5 miles south of Lake Pleasant. Maricopa County has also proposed four future trails that would be located within the Study Area (see **Section 3.6**). These trails have

been approved by the Maricopa County Board of Supervisors, but their exact locations could shift.

There are also several community parks located near the Study Area in Surprise, Buckeye, and Peoria that provide a variety of recreational facilities and opportunities. As discussed in **Section 3.6.3**, planned communities have identified areas of open space that would be available for recreational use, such as hiking and wildlife observation.

3.9.4 Recreational Use

The SCORP breaks the state into six planning units, one of which is Maricopa County.

In preparation of the 2008 SCORP (Arizona State Parks 2007), public surveys were conducted in 2006. The survey asked respondents to rate how often they currently participate in 22 different outdoor recreation activity categories, and if they will participate more, less, or the same in these activities over the next five years. Approximately 25 percent of Maricopa County respondents participate in OHV activities. Maricopa County respondents indicated they participated in OHV activities an average of four times last year (occasions, not days) in OHV activities, and approximately 22 percent indicated they expect their future participation level to increase.

3.9.4.1 OHV Recreation

The primary recreational use within the Study Area is OHV recreation. Within Maricopa County, there are three major areas for OHV recreation: The Tunnel-Cave Creek area, the Sycamore Creek/Rolls area, and The Boulders Staging Area/Hieroglyphic Mountains, which is within the Study Area. Of the three areas in the county, The Boulders/Hieroglyphic Mountains area receives proportionally more use than the other two areas – approximately 40 percent (T. Bickauskas, BLM, personal communication August 3, 2012).

The Hieroglyphic Mountains area (BLM managed public lands) contains two-track trails used for 4-wheel OHVs and single-track trails used primarily by motorcyclists. Mountain bikers and hikers also use the area, but the area recreational use is predominantly motorized. The topography of the area is low rolling hills, gradually gaining in elevation as the trails travel north from The Boulders Staging Area. The area is sparsely vegetated, with forests of saguaro cactus at higher elevations. As recreationists travel on the trails to the north, the area offers sweeping views of the valley to the south, with the suburbs of Phoenix visible in the distance. SR 74 is barely visible and difficult to locate in the view. The area feels very natural and remote. Occasionally trails and other riders are visible, but the presence of trails does not diminish the natural feeling of the surroundings.

The Boulders Staging Area is reached via a short access road north from SR 74. The Staging Area was constructed approximately five years ago to consolidate staging activities in one location, reducing resource impacts (T. Bickauskas, BLM, personal communication August 3, 2012). The Boulders Staging Area itself is a developed facility located on BLM managed land within the Hieroglyphics RMZ and north of SR 74. The Boulders Staging Area provides access to OHV trails ranging in difficulty that traverse the area between Lake Pleasant to the east, Wickenburg to the west, and Prescott National Forest to the north (AGFD 2011a). All OHV travel is limited to existing trails. Amenities within the staging area facility include camping facilities, a rest room, and an information kiosk that provides a map showing riding

trails, OHV guidelines, and safety information. OHV recreationists basing from The Boulders Staging Area are able to access trails within the Castle Hot Springs SRMA, Hieroglyphic Mountains RMZ, and Baldy Mountain RMZ.

Visitation statistics for The Boulders Staging Area are presented in **Table 3.9-1**.

Table 3.9-1 Visitation Statistics for The Boulders Staging Area

FISCAL YEAR	VISITOR DAYS
2009	26,050
2010	39,759
2011	48,584

Source: M. Skordinski, BLM, personal communication September 5, 2012.

Counts for visitor days at The Boulders Staging Area began when the area was completed in 2008. Visitor use of the area increased dramatically as a result of:

- The site being publicized by local businesses
- BLM manning the site with a host, which led to increased safety and good visitor behavior
- Discontinuation of recreational use of State Trust lands south of SR 74 (T. Bickauskas, BLM, personal communication September 5, 2012).

A recreation permit is required to access State Trust lands north of SR 74; State Trust lands south of SR 74 were closed to OHV recreation approximately four years ago. At that time recreational use at The Boulders Staging Area approximately tripled. Recreational use at The Boulders Staging Area now reaches capacity on many holiday weekends. (T. Bickauskas, BLM, personal communication August 3, 2012).

Approximately half of the OHV riders basing out of The Boulders Staging Area stay in relatively close proximity to the Staging Area. OHV riders seeking casual, less challenging routes, as well as riders seeking a more challenging experience, use this southern portion of the SRMA, in relatively close proximity to SR 74. Casual riders tend to prefer riding in the sandy wash bottoms of this area. Riders seeking a more challenging experience tend to venture north, further away from the staging area and the proposed Project (T. Bickauskas, BLM, personal communication August 13, 2012).

An area of State Trust lands is contained within the Castle Hot Springs SRMA north of The Boulders Staging Area and can be accessed for OHV recreation; however, an additional permit from the State is required. OHV recreation on State Trust lands south of SR 74 is not authorized (T. Bickauskas, BLM, personal communication August 3, 2012).

The BLM HFO has identified preliminary route designations through the Route Evaluation Process for existing roads, primitive roads, and trails used for OHV recreation. The preliminary routes that have been identified in the Study Area generally occur north of SR 74 (**Figure 3.9-3**). The single-track routes in the Study Area receive moderate use and the tertiary unpaved routes receive moderate to heavy use. The miles of routes and the route designations that occur within the Study Area are described in **Table 3.9-2**.

Table 3.9-2 Preliminary Route Designations within the Study Area

ROUTE DESIGNATION	MILES
Primary Road Paved: Major/minor highway. Provides access between major points. Serves a large area, with many roads branching from it.	7.8
Secondary Road Unpaved: Generally a regularly maintained one-lane road, with other roads of lesser quality branching from it. Connects primary roads and major points.	3.5
Tertiary Road Unpaved: Generally a two-track that may or may not be usable by a two-wheel drive vehicle. Generally, formal maintenance is not performed on this type of route.	44.3
Single Track: Hiking and biking; too narrow for a truck and, most times, an ATV. Can be up to 0.5 meter wide, not allowing ATVs or trucks.	12.0
Reclaiming: Has not been used enough so that there is intact woody vegetation growing that would be damaged by the passage of a vehicle. Erosion and vegetation may block way, cause vehicle to get stuck and/or cause damage to vehicle.	5.2
Total	**73.0**

Source: BLM 2010a

The Route Evaluation Process did not identify all OHV routes used in the area managed by the BLM; there are other existing routes that are used but are not identified on the map or assigned a route designation.

Single-track trails differ from two-track trails in the type of riding experience they offer. While motorcycle users may travel two-track trails to reach an area, they ride single-track trails for the recreation experience. Conversion of single-track to two-track trails changes the nature of the trail and the experience for the single-track rider, and leads to user conflicts. A portion of the OHV area east of The Boulders Staging Area and north of SR 74 is managed by the BLM for single-track use. Four-wheel OHVs are prohibited from accessing the single-track area in order to protect the single-track trails from conversion to two-track and to prevent user conflicts (T. Bickauskas, BLM, personal communication August 3, 2012).

Four-wheel OHV users are looking for a variety of experiences in their recreational use of the area. Despite the relatively close proximity of SR 74 to the trails, the highway is not visible, and the area feels remote. Some OHV recreationists use their OHVs to travel long distances and access areas where they can then hike. Also routes close to The Boulders Staging Area and SR 74 are sometimes used for hiking.

3.9.4.2 Target Shooting

Target shooting is a popular recreation activity in the Study Area, and frequently occurs on Church Road on BLM managed public lands (T. Bickauskas, BLM, personal communication August 3, 2012). The Bradshaw-Harquahala RMP specifies that target shooting be conducted in accordance with State law, which prohibits firing weapons at a residence or across a road. The RMP specifies that weapons are not to be fired within ¼-mile of any residence or occupied structure (BLM 2010a).

3.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.10.1 Overview

The information provided in the following subsections is taken from a report titled *Environmental Resource Report for Socioeconomics and Environmental Justice, Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012g). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review.

3.10.2 Applicable Laws, Rules, and Standards

Several county and local jurisdictions would be crossed by the Proposed Action route and other Action Alternative routes. Many of the goals, objectives, and policies set forth in the plans associated with these jurisdictions are related to socioeconomics.

As directed in Executive Order 12898, signed by President Clinton in 1994, Environmental Justice (EJ) is concerned with the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of negative environmental consequences resulting from industrial, municipal, utility, or commercial operations. The objective of EJ analysis is to identify minority and low-income populations potentially affected by a proposed project in order to determine whether a disproportionate impact to these populations may result.

The Bradshaw-Harquahala RMP/EIS (BLM 2008c) identified relevant human resource units (HRUs) for communities in the area, which are used in the analysis. A higher resolution analysis is then performed based on U.S. Census tract block groups.

3.10.3 Socioeconomic and Environmental Justice Study Areas

3.10.3.1 Socioeconomics

The Study Area for socioeconomics is located within Maricopa County, wherein any potential impacts of Project decisions would likely occur. The Bradshaw-Harquahala RMP/EIS (BLM 2008c) examined potential socioeconomic impacts in this same area and identified relevant HRUs for communities in the area (Kent and Preister 1999). Communities located within the same HRU are assumed to have a shared sense of place and sense of identity with respect to the land and people. This leads to a shared sense of understanding of the priorities surrounding how the resources of their HRU should be managed. The Study Area spans three HRUs—Wickenburg, Lake Pleasant, and Buckeye, as adopted in the

Bradshaw-Harquahala RMP/EIS and shown in **Figure 3.10-1**. These HRUs are primarily located within Maricopa County (the county with the highest population in the State of Arizona, and the fourth most populous county in the United States). Furthermore, Arizona's largest and most economically important city (Phoenix) is located within Maricopa County.

Nine communities have been identified within these three HRUs. These communities are either incorporated or unincorporated cities and intersect or are in close geographic proximity to the Proposed Action and Action Alternative routes (**Figure 3.10-1**). Within the Pleasant Lake HRU, the communities identified are Peoria, Surprise, Sun City West, El Mirage, Wittmann, and Circle City. Buckeye was identified as the only community within the Buckeye HRU. The Wickenburg HRU includes the communities of Wickenburg and Morristown.

Data sources used to characterize these communities include the 2000 and 2010 Census and the 2005-2009 and 2006-2010 American Community Survey (ACS)[1] as well as data from the Bureau of Labor Statistics, Arizona Department of Commerce, and Arizona Office of Employment and Population Statistics. For the communities of Wittmann, Circle City, and Morristown, some information was not directly available because they are not defined as municipalities or a Census place. Therefore, these areas were approximated using Census blocks. However, Census block level data are only available for the 2000 and 2010 Census, so these communities had to be combined and examined within a single Census tract when ACS data were used.

3.10.3.2 Environmental Justice

The Study Area for EJ is referred to as the three-mile Study Area and is defined as all Census tracts that fall within a three-mile radius of the Proposed Action and all Action Alternative routes. This area is assumed to encompass the potential impact area (see **Figure 3.10-1**). Beyond the 3-mile radius, the Study Area would include Census tracts that would not be anticipated to be affected by the Project. The HRU's used in the analyses in **Section 3.10.9.1** are informative, but a better fit for the three-mile Study Area was conducted using Census 2010 census tract block groups, which use smaller groups and provide finer resolution data. All of the census tract block groups that are wholly or partly within the three-mile Study Area were analyzed for low income and minority populations. The results of this analysis are in **Section 3.10.9.3**.

3.10.4 Socioeconomic Conditions

3.10.4.1 Populations

Population estimates and projections for the Study Area were collected from the U.S. Census Bureau (U.S. Census) and the Arizona Office of Employment and Population Statistics. **Table 3.10-1** summarizes these population data.

Between the years 2000 and 2010, the community of Buckeye within the Buckeye HRU experienced the fastest growth, with an increase of 678 percent as shown in **Table 3.10-1**. This growth is much higher than the growth experienced in the state (24.6 percent), Maricopa

[1] 2006-2010 ACS data are a representation of the average value over a five-year period.

County (24.2 percent), and nation (9.7 percent) as a whole. Additionally, some of the identified communities within the Lake Pleasant HRU also experienced this rapid growth including Surprise (281 percent) and El Mirage (318 percent).

Table 3.10-1 Population and Population Growth

PLACE	TOTAL POPULATION			PERCENT GROWTH	
	2000[a]	2010[a]	2030[b]	2000-2010	2010-2030
United States	281,421,906	308,745,538	363,584,435[c]	9.7%	15.1%[c]
Arizona	5,130,632	6,392,017	10,347,543	24.6%	61.9%
Maricopa County	3,072,149	3,817,117	6,135,000	24.2%	60.7%
Lake Pleasant HRU					
Peoria	108,364	154,065	306,070	42.2%	98.7%
Surprise	30,848	117,517	401,458	281.0%	241.6%
Sun City West	26,344	24,535	NA	-6.9%	NA
El Mirage	7,609	31,797	38,717	317.9%	21.8%
Wittmann	670	763	NA	13.9%	NA
Circle City	528	518	NA	-1.9%	NA
Buckeye HRU					
Buckeye	6,537	50,876	419,146	678.3%	723.9%
Wickenburg HRU					
Morristown	112	227	NA	102.7%	NA
Wickenburg	5,082	6,363	17,732	25.2%	178.7%

Sources: [a] U.S. Census Bureau 2000, 2010a, [b] Arizona Office of Employment and Population Statistics 2007. [c] U.S. Census Bureau 2005.
NA – Projections not available.

As shown in **Table 3.10-1**, projected population growth in the Study Area is expected to continue at a rapid rate into 2030. All communities where data were available are expected to grow at a faster rate than the state and county, except for the City of El Mirage.

3.10.4.2 Employment and Earnings

Employment and earnings data by industry are available from the Bureau of Economic Analysis by Metropolitan Statistical Area (MSA) and for the county as a whole, which limits the ability to compare differences across the HRUs. Given that portions of the Study Area lie outside the Phoenix MSA, only data for Maricopa County are presented in **Table 3.10-2**.

Within Maricopa County, the largest and most highly compensated economic sector is the Finance, Insurance, and Real Estate sector. This sector accounted for 30.4 percent of all employment and 31.8 percent of all wages earned in 2009. The second largest sector of the county's economy is the Trade sector, which includes both retail and wholesale trade activities. In 2009, Trade accounted for 15.5 percent of all employment and 14.1 percent of all wages earned.

Major changes in the county's economic sectors from 2001 to 2009 include a decline in the percentage of people employed, as well as earnings, in the construction sector. Employment and earnings in the Manufacturing sector also decreased falling from 8.2 percent of employment in the county in 2001 to 5.4 percent in 2009.

In contrast, the Health Care sector experienced an increase in total employment and earnings, growing from 7.5 percent of employment in 2001 to 9.9 percent in 2009. Earnings in this sector, as share of total earnings in the county, increased from 7.9 percent in 2001 11.6 percent in 2009.

Employment and earnings in other sectors remained relatively constant.

Table 3.10-2 Employment and Earnings by Industry Sector for 2001 and 2009

SECTOR	MARICOPA COUNTY			
	2001	2009	2001	2009
TOTALS (IN DOLLARS AND EMPLOYEES)	**$79,177,485**	**$108,045,920**	**1,896,642**	**2,148,540**
	EARNINGS BY %		**EMPLOYMENT BY %**	
Farm, Agricultural Services, Forestry, and Other	0.5%	0.2%	0.6%	0.4%
Mining	0.2%	0.4%	0.2%	0.3%
Construction	9.7%	6.7%	7.9%	5.9%
Manufacturing	11.8%	8.5%	8.2%	5.4%
Transportation and Public Utilities	4.3%	4.4%	3.6%	3.5%
Retail and Wholesale Trade	14.7%	14.1%	15.8%	15.5%
Finance, Insurance, and Real Estate	31.0%	30.4%	30.8%	31.8%
Education	0.8%	1.7%	1.2%	2.1%
Health Care	7.9%	11.6%	7.5%	9.9%
Arts, Hospitality and Other	8.0%	8.2%	13.9%	14.3%
Government	11.3%	13.8%	10.3%	10.9%

Sources: Bureau of Economic Analysis 2001, 2009

Levels of unemployment provide an understanding of community character. Unemployment data for the smaller communities in the Study Area such as Sun City West, Wittmann, Circle City, Morristown, and Wickenburg were not available for the year 2010. The older data sources available were all pre-2008 and would not demonstrate the effects of the current economic recession and therefore do not serve as a viable substitute in this instance.

Unemployment rates in Arizona and Maricopa County are currently high with both having an unemployment rate over nine percent in 2010 (see **Table 3.10-3**). Of all the communities within the Lake Pleasant HRU, only Peoria has an unemployment rate below that of the state and county averages. Therefore, it is not unreasonable to assume similar trends for the communities where current unemployment data were not available.

Table 3.10-3 Number Employed and Unemployment Rate

(Footnotes at end of table.)

PLACE	EMPLOYED	UNEMPLOYMENT RATE
United States	139,064,000	9.6%
Arizona	2,859,967	10.0%
Maricopa County	1,816,882	9.1%
Lake Pleasant HRU		
Peoria	72,873	6.5%
Surprise	31,322	11.3%
Sun City West	N/A	N/A
El Mirage	9,894	13.6%
Wittmann and Circle City	N/A	N/A
Buckeye HRU		
Buckeye	19,070	11.4%
Wickenburg HRU		
Morristown	N/A	N/A
Wickenburg	N/A	N/A

Source: Bureau of Labor Statistics 2010
N/A = Not Available

3.10.4.3 Housing Values

Median housing values within the Study Area, as well as throughout the State of Arizona, have substantially increased from the year 2000, even considering the housing price decline at the end of the previous decade. In 2010, the median housing value in Maricopa County was $180,800, 40 percent higher than values in the year 2000 (U.S. Census Bureau 2010a). Data are only available at the community level for 2005-2009. To get a sense of the difference between 2010 and 2005-2009 data, the 2005-2009 median housing value for Maricopa County was $243,300 or 35 percent higher than the 2010 median housing value. This decrease in median housing value between 2005-2009 and 2010 is related to the general economic conditions that affected housing values nationwide. With this decrease in mind, the 2005-2009 housing values for communities are presented in **Table 3-10.4**, and while high on an absolute level, they provide an accurate relative comparison of values between these communities.

Overall, communities within the Wickenburg HRU experienced the smallest increase in median housing values as a whole when compared to the other HRUs. However, housing values within the Wickenburg HRU communities were generally higher than in the other HRUs. The communities of Buckeye and El Mirage experienced the highest increase in housing values, which is most likely correlated to the large increase in population experienced in these communities.

Table 3.10-4 Housing Values 2000 and 2005-2009

PLACE	VALUE 2000	VALUE 2005-2009	CHANGE IN VALUE
United States	$119,600	$185,400	55.0%
Arizona	$121,300	$218,400	80.0%
Maricopa County	$129,200	$243,300	88.3%
Lake Pleasant HRU			
Peoria	$127,000	$244,800	92.8%
Surprise	$128,300	$247,300	92.8%
Sun City West	$142,900	$216,400	51.4%
El Mirage	$82,700	$186,200	125.2%
Wittmann and Circle City*	$167,300	$272,800	63.1%
Buckeye HRU			
Buckeye	$86,400	$210,500	143.6%
Wickenburg HRU			
Morristown*	$167,300	$272,800	63.1%
Wickenburg	$150,100	$243,900	62.5%

Sources: U.S. Census Bureau 2000; U.S. Census Bureau 2005-2009 American Community Survey
*Information was not available at the Census block or block group level, so Census tracts were used to most closely approximate the characteristics of these communities. Given the close proximity of these communities, all three are within the same Census tract.

3.10.5 Fiscal Conditions

The key fiscal conditions examined below are property taxes, State Trust lands, and utility rates. An understanding of the primary revenue resources for local governments is important so that the context of any effects to these revenues sources can be identified. The transfer of land ownership from either the federal government or the ASLD is not anticipated. Rather, APS would secure an easement on the land required for the Proposed Action or the Action Alternative routes.

3.10.5.1 Property Taxes

The primary sources of tax revenue for Maricopa County include property taxes, state shared sales tax, licenses, permits, fees and charges for services, and grant payments from other governments.

Of the $2.3 billion budget for Maricopa County for the fiscal year 2012, property taxes, penalties, and interest account for 21.3 percent (Arizona Department of Revenue 2010). Approximately $1.23 billion or 52.8 percent of the total budget is allocated for public safety. For the 2010 tax year, the net property valuation for Maricopa County was approximately $46,842 million. The net property valuation for the state was approximately $71,371 million for that same year.

Table 3.10-5 presents the property tax rates for six of the nine communities identified within the Study Area (information was not available for Wittmann, Circle City, and Morristown). Tax rate distributions for revenues to school districts, city/county fire, and countywide were collected for each of the six communities. These values were averaged to obtain an overall average for the Study Area.

Table 3.10-5 Average Property Tax Rate Calculations (Percent)

PLACE	PROPERTY TAX CATEGORY			TOTAL
	School District	City/County Fire	Countywide	
Buckeye	2.90	0.90	2.33	6.13
El Mirage	5.62	0.98	2.33	8.93
Peoria	5.72	1.44	2.33	9.49
Sun City West	5.60	1.76	2.33	9.69
Surprise	4.75	0.61	2.33	7.69
Wickenburg	4.75	0.48	2.33	7.56
Average	**4.89**	**1.03**	**2.33**	**8.25**

Source: Arizona Department of Commerce 2009

Table 3-10.6 provides estimates of tax revenues of the private property potentially affected by the Proposed Action and Action Alternative routes. Assuming an average tax rate of 8.25 percent, from above, the maximum annual tax income generated from the private properties would be approximately $289,151 for the Proposed Action and ranges up to $919,151 for Alternative 3.

Table 3.10-6 Private Land Characteristics

	LENGTH (MILES)*	ACREAGE (ACRES)	VALUE	TAX REVENUE
Proposed Action	4.4	106.67	$3,504,856	$289,151
Alternative 1	4.4	106.67	$3,504,856	$289,151
Alternative 2	7.6	184.22	$7,573,319	$624,799
Alternative 3	9.3	255.43	$11,020,016	$919,151

Source: APS 2011a
*This distance represents the number of Project miles crossing privately owned land.

3.10.5.2 State Trust Land

Arizona State Trust land is managed by the ASLD. The ASLD's mission is to manage the State Trust lands and to maximize its revenues for the beneficiaries. Out of a total of approximately 9.2 million acres, common schools[2] are the beneficiaries for about 8.1 million acres, or 87 percent of the State Trust lands. Other beneficiaries include normal school grants, agricultural and mechanical colleges, School of Mines Grant, and the University Land Code (ASLD 2011b). While public use of State Trust land is not prohibited, it is regulated to ensure protection of the land and to reimburse the beneficiaries for its use.

In order to generate revenue, State Trust land is either leased for its highest and best use or sold to the highest bidder at public auction, which is mandated by law. Most State Trust lands are currently used for livestock grazing purposes.

Approximately 8.4 million acres of State Trust land is leased for livestock grazing, often as part of a ranching operation with associated private and federal land. State Trust land grazing leases are issued for a term of 10 years or less, and some have been held by ranching families for multiple generations. Today the ASLD's urban lands lease and sale program is the largest revenue producer for the Trust. Nearly all of the most valuable urban State Trust lands are located around the northern border of the Phoenix metropolitan area and common schools are the beneficiaries (ASLD 2011b).

The beneficiaries of the revenue generated by these activities are common schools in the state. The total revenue generated from State Trust lands in 2010 was $9,258,071. The common schools in Arizona received $2,042,615 in revenue generated from grazing leases on State Trust land in 2010 (Maricopa County 2011).

3.10.5.3 Utility Rates

The ACC is the State agency established by the Arizona Constitution to set utility rates for public service corporations, such as APS. The cost of new utility infrastructure is captured in

[2] The ASLD defines common schools as all public schools K-12 and normal schools as schools that train teachers (ASLD 2011b).

the rates paid by utility customers through the transmission cost adjuster, which is updated annually in June (R. Stuhan, APS, personal communication, April 2013).

3.10.6 Recreation Expenditures

Open space, parks, and recreational opportunities are very important to Arizona residents and the Arizona economy. In Arizona, 5.5 million active outdoor recreation participants generate approximately $350 million in state tax revenue, $5 billion in retail services, and support 82,000 jobs across the state every year (Outdoor Industry Foundation 2010). Recreational activities on public lands, which make up 40 percent of the state, contribute about $2 billion to Arizona's economy (DOI 2011). The estimated recreational use of public lands managed by the BLM in Arizona was 5,581,000 visits in 2010 (BLM 2010b). Approximately 2.3 million people visit Arizona state parks each year, and state residents account for about half of visitors, while 43 percent are from out of state, and 7 percent are international tourists (ASU 2009).

A telephone survey conducted by Arizona State University in 2006 revealed that the Maricopa County Parks system received 1,255,733 visits that year (ASU 2006). The Project Area is just south of The Boulders Staging Area (discussed in **Section 3.9**), which has 30,000 visitor-days per year. It is estimated that 25 to 50 percent of visitors to this site use the southern trails that extend into the Project Area (T. Bickauskas, BLM, personal communication, February 2012).

The Environmental Resource Report for Land Use, Recreation, and Special Designations (URS 2012a) describes how recreational land has both developed and undeveloped uses, including golf courses, parks, campgrounds, and trails. These areas provide a variety of recreational opportunities such as hiking, wildlife viewing, and OHV use. All of the federally managed lands within the Study Area allow recreationists a high degree of interaction with the natural environment through hiking, hunting, and the use of motorized equipment. The adjacent lands are characterized by the large presence of human activity dependent on facility or vehicle use, such as vehicle sightseeing, horseback riding, golf, and swimming. These land types attract many visitors due to the OHV recreation opportunities. In Maricopa County, OHV recreation activities produced $1.4 billion for the local economy and supported 13,111 jobs in the region in 2003 (Arizona State Parks 2003).

The state parks found within the Study Area are White Tank Mountain and Lake Pleasant Regional Parks (URS 2012a). In the fiscal year of 2010, Lake Pleasant Regional Park attracted 623,294 visitors who participate in boating, fishing, water sports, as well as hiking, camping, and wildlife viewing. No OHV use is allowed in Lake Pleasant Regional Park. White Tank Mountain Regional Park had 188,911 visitors who use the park trails for recreational activities such as hiking, biking, horseback riding, and camping. There is one island of State Trust lands within the Castle Hot Springs SRMA and OHV recreationists would access that area by basing out of The Boulders Staging Area; however, a separate permit is required. See **Section 3.9 Recreation**.

3.10.7 Property and Land Values

Given the importance of concerns related to property-value impacts resulting from the Project, a literature review was conducted to summarize related research and empirical studies on the impact of transmission lines on property values. The results of all the studies cited in this section are provided in **Appendix 3A**.

Studies on the implications of transmission lines identified three main factors that affect property values. These are health and safety concerns, visual impacts, and proximity to the transmission line.

3.10.7.1 Health and Safety Concerns and Impacts on Property Values

Many of the research surveys outlined in **Appendix 3A** show that some survey respondents mentioned health and safety as a top concern regarding a property near a transmission line (BLM 2011d, Delaney and Timmons 1992, Kung and Seagle 1992, Priestly and Evans 1996, Bond and Hopkins 2000). These studies indicate the evidence of a substantial direct effect on property values is uncorroborated. However, a literature review of studies relating to the topics of EMFs and stray voltage and public perception indicates a "fear" of high voltage power lines, citing health concerns as the primary factor (Kielisch 2010).

3.10.7.2 Visual Impacts

The visual impact of transmission lines is another factor to evaluate when examining the effects on property values. A review of the literature shows no definitive pattern between visual impacts and property values.

Many respondents to survey-based studies and participants in the 2011 Public Scoping Report were concerned with how the visual obstruction to scenic views caused by the transmission line would negatively affect the aesthetics of the surrounding area and the property values of those closest to the lines (BLM 2011d, Priestly and Evans 1996, Solum 1985, Delaney and Timmons 1992, Kung and Seagle 1992, Rhodeside & Harwell 1988, Economics Consultants Northwest 1990, Beauregard Conseil Enr 1990, Bond and Hopkins 2000, Pitts and Jackson 2007). Residents of Vistancia, in particular, expressed concern about the extent to which the transmission line would obscure their scenic views.

In comparison, some studies have shown that removal of existing vegetation during the construction of the transmission line improves visual clearance, and is viewed by the property owner as a positive outcome, depending on how the lines blend in with the characteristics of the surrounding topography (Des Rosiers 2002). A third perspective in case studies on the effects of visual impacts and property values is one that does not find the transmission lines disruptive to the aesthetics of the area (Public Service Commission of Wisconsin 2011). Therefore, the extent of visual impacts of transmission lines and changes in property values is largely dependent on the perspective of the individual property owner and does not produce identical behavior in every location or situation.

The attitudinal case studies that focus on the perceived effects of visual and health concerns of transmission lines are generally regarded as less sophisticated than the regression-based research because they over-estimate the negative impacts and do not accurately quantify the market behavior of property buyers (Kroll and Priestly 1991). This is because perceptions

about transmission lines are diverse and result in varying financial responses. The significant concerns about the impact of transmission lines voiced by appraisers and property owners (the stated preferences) do not always correspond with actual property sales data (the revealed preferences) because the adverse impacts may be offset by a number of other factors related to pricing decisions (Jackson and Pitts 2010).

3.10.7.3 Proximity and Property Values

Proximity of a property to a transmission line could be a significant factor for impacts on property values. As seen in **Appendix 3A**, about half of the reviewed studies found that proximity had little to no effect on actual property sales (Rigdon 1991, Jackson 2010, Chalmers and Voorvaart 2009, Wolverton and Bottemiller 2003, Kinnard and Dickey 1995). However, some studies did find that proximity had a significant impact on property values with varying levels of negative effects: properties close to a transmission line lost between 2.8 percent and 30 percent of their value (Bond and Hopkins 2000, Colwell 1990, Hamilton and Schwann 1995, Des Rosiers 2002, Boyer 1978, Goodrich-Mahoney 2003, Davis 2008, Davis 2010, Bolton and Sick 1999).

A pattern of specific distance impacts emerged from the studies that evaluated effects on property values based on specific distances. Overall, properties within 50 feet of the transmission line experienced the most negative effect on price, while those 50 to 200 feet from the transmission line experienced small negative price effects, and the properties beyond 200 feet did not experience any negative price effects. The effects of proximity to a transmission line are therefore amplified within dense, urban settings where many properties will be close to the transmission line. This effect may not be as relevant to rural locations, such as the Project Area, where there are typically fewer properties within close proximity to each transmission line. Another study (Bolton 1993 in Kielisch n.d.) found that properties adjoining the ROW or easement had lower value assessments, and took longer to sell.

While most of the studies that examine effects on values focus on residential properties, a few have examined the effects on undeveloped land (Jackson 2010, Rigdon 1991, Solum 1985, Rolling & Biller 2006). These studies show that the relationship between sales price and proximity to a transmission line were not statistically significant. However, a study of large tracts of agricultural land in Southwest Indiana completed in 2010 showed that agricultural land located near transmission lines could be negatively affected with an impact range of -5 percent to -34 percent with an average of -20 percent (Kielisch 2010); lower value impacts occurred when the transmission line ROW or easement was along the property line, and impacts at the higher end of the range occurred when the transmission line bisected the property.

3.10.8 Nonmarket Values Associated with Health and Safety, Recreation Use, and Natural Amenities

The value of resource goods traded in a market can be obtained from information on the quantity sold and market price; however, markets do not exist for some resources, such as recreational opportunities and environmental services. Measuring their value is important, since without estimates, these resources may be implicitly undervalued and decisions regarding their use may not accurately reflect their true value to society. Because these

recreational and environmental values are not traded in markets, they can be characterized as non-market values.

Some people may value BLM property that is associated with a transmission line less because of health concerns, visual obstruction, and changes to recreation. Others may value the benefits of increased access to adjacent lands or extra space and light that are a result of proximity to a transmission line (Furby et al. 1988). Besides improving access for recreational activities, transmission lines can impact the surrounding ecosystem in both beneficial and detrimental ways. The construction of a transmission line often involves habitat disturbance and destruction. However, transmission lines can also provide bird habitats, wildlife corridors, and opportunities for vegetation growth.

3.10.8.1 Health and Safety Concerns

Health and safety was a major area of concern of the respondents in the 2011 Public Scoping Report (BLM 2011d) and other survey-based research studies. These concerns were primarily related to the potential health impacts resulting from exposure to EMFs. However, many commenters had mistakenly thought that the Proposed Action and/or the Action Alternatives for placement of the power line would be very near their existing dwellings, when in fact the line could be several miles distant.

Many scientific studies have attempted to determine whether there is a connection between exposure to electromagnetic radiation emitted by transmission lines and health hazards. The 1999 (a and b) NIEHS expert group research assessed the health effects of exposure to the EMFs emitted from transmission lines and concluded that evidence is not sufficient to establish a definitive cause and effect relationship. The International Agency for Research on Cancer came to a similar conclusion (Kheifets 2001). For some members of the general public, the potential health risks of exposure to EMFs, whether conclusive or not, remains a concern and affects their interest in properties near transmission lines.

3.10.8.2 Recreation Use

Non-market values, as they relate to recreation, can be broken down into two categories, use and non-use values. The use-value of a non-market good is the value to society from the direct use of the asset; within the Study Area this occurs through activities such as recreational fishing, hunting, and bird watching. The use of non-market goods often requires consumption of associated market goods, such as lodging, gas, and fishing equipment. Non-market use and non-use values can be distinguished by the methods used to estimate them. Use values are often estimated using revealed preference methods or stated preference methods while non-use values can only be estimated using hypothetical methods (willingness-to-pay or contingent valuation). While use and non-use values exist for the Study Area, an evaluation is not always feasible during the planning process. However, this does not preclude their consideration in the planning process.

Contingent Valuation

A study of OHV recreation activity in the Mojave National Preserve in California, showed recreationists visiting the area spent a total of $407 million in 2003 (Kroeger and Manalo 2007). The same study also reveals the net economic value of OHV recreation in Arizona was $61 per day. Contingent valuation estimates derived from OHV recreation in Utah

showed net economic values are between $55.60 and $85.80 per trip (Jakus and Keith 2010). The research also showed that changing access to public lands used for OHV from "open" to "limited" resulted in relatively small welfare losses ($0.94 per trip), but that completely prohibiting access resulted in much larger welfare losses ($1.22 per trip) - a reduction of 1.4 percent to 2.2 percent per trip.

Another study examined contingent valuation of OHV recreation in Arizona and found high net economic values. A pooled sample of all types of OHV's, including all-terrain vehicles, dirt bikes, and dune buggies, show that the average Arizona net economic value per OHV trip was $68. These values are notable for the Project because they were gathered in Arizona, where more than 20 percent of the population participates in OHV recreation (Silberman and Andereck 2006).

3.10.8.3 Natural Amenities

Natural amenities such as access to public lands have been shown to influence regional population distribution and economic growth. Research in migration trends over several decades appear to be tied to household preferences for amenities, which were determined to be just as important as employment opportunities (Mueser and Graves 1995). Location-specific amenities can also drive firm location decisions and the demand for labor in an area (Knapp and Graves 1989). The draw of natural amenities is especially powerful in rural counties, where population change and relocation of employers have been strongly related to the attractiveness as a place to live (McGranahan 1999). Studies undertaken in Arizona support these findings. Public surveys conducted in conjunction with the 2008 SCORP (Arizona State Parks 2007) described four different recreation settings:

- Large, nature-oriented parks with few buildings primarily used for hiking, picnicking, or camping
- Open spaces in natural settings with very little development
- Large, developed parks with many facilities and uses
- Small neighborhood parks that have only a few facilities.

Survey respondents were asked to rate the statements regarding the settings on a scale of 1 *not important* to 5 *extremely important*. When asked the importance of different recreation settings, survey respondents from Maricopa County ranked all four settings very high; however, the responses were noticeably higher in support of two settings: *large nature-oriented parks* (4.27) and *open spaces in a natural setting* (4.18).

When asked a series of issue statements, the statement, "If I bought a house in my community, having open space nearby would be a top priority" scored highest (3.93) by survey participants from Maricopa County.

However, an increase in recreational activity enabled by a transmission line may also result in expanded habitat degradation of endangered species. In *Center for Biological Diversity, et al., v Bureau of Land Management, et al.* (2005) the court ruled in favor of the environmental organizations that claimed BLM and the USFWS violated the ESA by failing to adequately protect the desert tortoise and Peirson's milk-vetch because the management plan for OHV recreation in the affected environment did not have adequate safeguards to ensure the

species' continued existence. This is an important consideration for the Project because the transmission line would cross desert tortoise habitat and some respondents were concerned about the impacts on recreation and the surrounding ecosystem.

Overall, the impacts of a transmission line on the surrounding natural amenities and ecosystem services depend on the existing environmental conditions and land uses. Non-use values of a non-market good, such as natural amenities, reflect the value of an asset beyond any use. These can be described as existence, option, and bequest values. Existence values are the amount society is willing to pay to guarantee that an asset simply exists. An existence value of BLM lands within the an area might be the value of knowing that undisturbed archeological sites or San Joaquin Kit Fox habitat exists on BLM lands. Other non-use values are thought to originate in society's willingness to pay to preserve the option for future use; these are referred to as option values and bequest values. Option values exist for something that has not yet been discovered, such as the future value of a plant as medicine. In the Study Area, bequest and option values might exist for desert tortoise habitat.

3.10.9 Environmental Justice

3.10.9.1 Minority Populations within the HRUs and Nine Communities

As presented in **Table 3.10-7**, the percentage of minority populations in most of the communities within 10-miles of the Proposed Action and Action Alternatives is below that of both Arizona and Maricopa County. Minority populations in this analysis is defined as all individuals who identify themselves as Hispanic or one of the four racial minority groups used in the 2010 Census. Minority populations accounted for more than 40 percent of the population in both the state and the county. Hispanics were the largest minority group, comprising 29.6 percent of the total population in both the county and state. Within the HRUs examined, the fastest growing communities over the past 10 years (Buckeye and El Mirage) had the highest percentages of minority population. However, El Mirage falls well outside the three-mile Study Area. The Wickenburg HRU had the lowest overall percentage of minority representation compared across the HRUs. As in the state and county, the largest minority group in all nine communities was the Hispanic population.

Table 3.10-7 Minority Representation by Race and Ethnicity – 2010

PLACE	HISPANIC	NON-HISPANIC AFRICAN AMERICAN	NON-HISPANIC NATIVE AMERICAN	NON-HISPANIC ASIAN	NON-HISPANIC ALL OTHERS	TOTAL MINORITY
Arizona	29.6%	3.7%	4.0%	2.7%	2.1%	42.2%
Maricopa County	29.6%	4.6%	1.6%	3.4%	2.2%	41.3%
Lake Pleasant HRU						
Peoria	18.6%	3.2%	0.7%	3.1%	2.2%	27.8%
Surprise	18.5%	4.8%	0.5%	2.5%	2.6%	28.8%

Table 3.10-7 Minority Representation by Race and Ethnicity – 2010 (Continued)

PLACE	HISPANIC	NON-HISPANIC AFRICAN AMERICAN	NON-HISPANIC NATIVE AMERICAN	NON-HISPANIC ASIAN	NON-HISPANIC ALL OTHERS	TOTAL MINORITY
Sun City West	1.2%	0.8%	0.1%	0.6%	0.5%	3.2%
El Mirage	47.6%	6.1%	1.0%	1.5%	2.6%	58.6%
Wittmann	39.2%	0.1%	1.7%	0.7%	1.8%	43.5%
Circle City	22.0%	0.2%	0.8%	1.9%	1.9%	26.8%
Buckeye HRU						
Buckeye	38.3%	6.7%	1.2%	1.7%	2.3%	50.1%
Wickenburg HRU						
Morristown	4.8%	0.0%	0.5%	0.0%	0.5%	5.8%
Wickenburg	13.4%	0.2%	1.2%	0.5%	1.0%	16.3%

Source: U.S. Census Bureau 2010b

3.10.9.2 Low-Income Populations within the HRUs and Nine Communities

As shown in **Table 3.10-8**, between 2005 and 2009, Maricopa County had a slightly lower level of persons living in poverty than the state as a whole,[3] as well as a slightly higher median household income. **Table 3.10-9** presents Federal poverty thresholds that were used by the U.S. Census Bureau in determining poverty status in 2009. The majority of the communities had a lower percentage of persons living in poverty and higher household incomes than both the state and county averages. Communities with a higher percentage of persons living in poverty than Maricopa County as a whole were also the communities with lower median household incomes, specifically El Mirage and Wickenburg.

[3] The Census Bureau uses a set of income thresholds to detect who is poor (see **Table 3.10-3**). If the total income falls below the relevant poverty threshold, then a classification of being below the poverty level is given.

Table 3.10-8 Poverty and Household Income (2005-2009)

(Footnotes at end of table.)

PLACE	PERCENT OF PERSONS LIVING IN POVERTY	MEDIAN HOUSEHOLD INCOME
Arizona	14.7	$50,246
Maricopa County	13.3	$55,223
Lake Pleasant HRU		
Peoria	6.3	$65,400
Surprise	7.1	$61,208
Sun City West	3.8	$45,425
El Mirage	18.7	$50,411
Wittmann and Circle City*	7.8	$60,568
Buckeye HRU		
Buckeye	11.4	$61,481
Wickenburg HRU		
Morristown*	7.8	$60,568
Wickenburg	17.1	$42,417

Source: U.S. Census Bureau 2005-2009

*Information was not available at the Census block or block group level, so Census tracts were used to most closely approximate the characteristics of these communities. Given the close proximity of these communities, all three are within the same Census tract. The best available data were used; however, the information may not be comparable.

Table 3.10-9 Poverty Thresholds for 2009 by Size of Family and Number of Related Children Under 18 Years

SIZE OF FAMILY UNIT (# OF PERSONS)	INCOME THRESHOLD	RELATED CHILDREN UNDER 18 YEARS OLD								
		0	1	2	3	4	5	6	7	8 OR MORE
1	$10,956									
2	$13,991									
3	$17,098	$16,781	$17,268	$17,285						
4	$21,954	$22,128	$22,490	$21,756	$21,832					
5	$25,991	$26,686	$27,074	$26,245	$25,603	$25,211				
6	$29,405	$30,693	$30,815	$30,180	$29,571	$28,666	$28,130			
7	$33,372	$35,316	$35,537	$34,777	$34,247	$33,260	$32,108	$30,845		
8	$37,252	$39,498	$39,847	$39,130	$38,501	$37,610	$36,478	$35,300	$35,000	
9 or more	$44,366	$47,514	$47,744	$47,109	$46,576	$45,701	$44,497	$43,408	$43,138	$41,476

Source: U.S. Census Bureau 2012b

3.10.9.3 Environmental Justice Baseline Analysis

Because the HRUs do not provide a very high resolution image of the three-mile Study Area, a second analysis was conducted using Census 2010 census tract block groups. An area was determined to be an EJ community if it had a meaningfully higher percentage of minority or low-income individuals than the county. This was quantified as the Census block groups with minority or low-income populations that were twenty percent greater than the percentage of minority populations in the county; in addition, this minority population had to comprise at least ten percent of the total population of the block group. This second requirement was necessitated when the initial analysis, based only on the first requirement, was run; it resulted in a large number of minority populations which consisted of less than one percent of the block group populations, which was itself less than 1,000 people. This meant that ten or fewer people could constitute a minority population, which does not meet the standard of being "meaningful greater" population, although the standard is admittedly open to interpretation.

The fact that Census data can only be recorded to certain prescribed levels (e.g., Census block groups) suggests that pockets of minority or low-income communities smaller than block groups may be missed in a Census-based analysis. This restriction was instituted by the Census Bureau to preserve the anonymity of census respondents.

Table 3.10-10 presents the 2010 Census data for the percent of ethnic and racial minority populations by minority group; and 2006-2010 ACS estimates of the percentage of the population in living below the federal poverty level (**Table 3.10-3**) in the block group. The population in the three-mile Study Area is 21.59 percent minority, counting Hispanic,

African American, Native American, Asian, and Pacific Islanders as minority groups; this omits the Census 2010 ethnic and racial categories for "Other" and "2 or more," which cannot be identified as specific minority groups. The concentrations of minority and low-income populations in the three-mile Study Area are lower than those found in Maricopa County. The population of Maricopa County is 41.3 percent minority and 13.9 percent low-income (U.S. Census Bureau 2010b and U.S. Census Bureau 2006-2010).

Of the 17 block groups located wholly or partially within the three-mile Study Area, one block group was designated an EJ community (Tract Group 040517, Group 1) because it has a low-income population twenty percent above that of the county, and the low-income population constitutes at least ten percent of the total block group population. **Figure 3.10-1** provides the location of the EJ community with the low-income EJ population. The total 2010 census population within the 17 block groups is 39,754. Within the EJ community 710 of the 4,058 residents fell below the poverty threshold.

In **Table 3.10-10**, the minority population is shown in **bold** type.

Table 3.10-10 Minority and Low-Income Percentages in the Three-Mile Study Area

TRACT	BLOCK GROUP	TOTAL POPULATION	MINORITY POPULATION						% LOW INCOME
			% HISPANIC	% AFRICAN AMERICAN	% NATIVE AMERICAN	% ASIAN	% PACIFIC ISLANDS	% TOTAL	
State	AZ	6,392,017	29.65%	4.05%	4.64%	2.76%	0.20%	40.27%	14.70%
County	Maricopa	3,817,117	29.57%	4.99%	2.05%	3.46%	0.20%	41.3%	13.30%
040515	2	2,281	18.85%	0.35%	1.05%	0.75%	0.04%	21.04%	12.70%
040516	1	782	15.22%	1.53%	0.90%	0.90%	0.00%	18.55%	0%
040516	2	2,074	4.68%	2.03%	0.34%	0.92%	0.24%	8.21%	3.85%
040517	1	4,058	22.45%	0.62%	1.23%	0.94%	0.15%	25.39%	**17.50%**
040518	1	1,767	13.70%	0.11%	1.53%	0.17%	0.06%	15.57%	12.21%
040518	2	1,866	15.17%	0.27%	0.43%	0.38%	0.21%	16.46%	2.02%
040519	1	1,785	6.67%	2.07%	0.39%	3.92%	0.06%	13.11%	5.51%
040520	1	2,537	11.43%	3.39%	0.28%	2.80%	0.59%	18.49%	1.60%
040520	2	1,605	8.97%	2.68%	0.12%	5.48%	0.19%	17.44%	2.66%
040521	1	4,560	13.82%	2.08%	0.55%	2.26%	0.07%	18.78%	1.44%
050605	1	2,050	31.46%	4.34%	1.12%	1.61%	0.24%	38.77%	10.04%
050605	2	1,604	25.94%	8.98%	1.25%	2.43%	0.25%	38.85%	3.42%
050605	3	2,174	25.07%	3.91%	1.43%	2.67%	0.18%	33.26%	4.20%
610000	1	1,893	5.39%	0.63%	0.53%	0.69%	0.00%	7.24%	3.84%
610000	2	2,052	27.19%	9.45%	5.90%	1.46%	0.39%	44.39%	4.20%
610800	1	3,505	8.42%	1.74%	0.37%	7.90%	0.06%	18.49%	5.55%
610900	2	3,161	10.16%	2.12%	0.54%	2.94%	0.00%	15.76%	3.56 %

Source: U.S. Census Bureau 2012b and U.S. Census Bureau. 2006-2010.

3.11 SOILS

The information provided in the following subsections is taken from a report titled *Environmental Resource Report for Geology, Geologic Hazards, Minerals, and Soils, Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012c). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review.

3.11.1 Laws, Ordinances, Regulations, and Standards

Soil resources and hazards are governed primarily by local jurisdictions. The conservation safety elements of city and county general plans contain policies for protection of geologic features and avoidance of hazards, but do not specifically address transmission line construction projects. Local grading ordinances establish detailed procedures for construction. The following section provides a summary of international, federal, state, and local laws, regulations, and standards that govern soils in the Study Area.

Federal Land Policy and Management Act of 1976, as amended - The FLPMA established policies and goals to be followed in the administration of public lands by the BLM. The intent of the FLPMA is to protect and administer public lands within the framework of a program of multiple-use and sustained yield, and to maintain environmental quality. Particular emphasis is placed on protection of the quality of scientific, scenic, historic, ecological, environmental, air and atmospheric, water resources, and archeological values. The FLPMA dictates how BLM regulates mineral resources extraction on BLM land.

Classification and Multiple Use Act of 1964 - This act authorized the Secretary of the Interior to classify and manage BLM land for retention or disposal and for multiple use, including specification of dominant uses and preclusion of inconsistent uses in an area.

International Building Code - The 2006 IBC is a model building code developed by the ICC. The IBC sets rules specifying the minimum acceptable level of safety for constructed objects such as buildings. It has been adopted throughout most of the United States. The IBC has no legal status until it is adopted or adapted by government regulation. The IBC was developed to consolidate existing building codes into one uniform code that provides minimum standards to ensure the public safety, health, and welfare insofar as they are affected by building construction and to secure safety to life and property from all hazards incident to the occupancy of buildings, structures, or premises. The IBC replaced the UBC in 2000.

Farmland Protection Policy Act of 1981 - The Farmland Protection Policy Act of 1981 is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that—to the extent possible—federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. Federal agencies are required to develop and review their policies and procedures to implement the Act every two years. For the purpose of the Act, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to the Act's requirements does not have to be currently used for cropland.

Other relevant laws and regulations include the following:

- Public Law 167 of 1955, 30 USC § 601 et seq.
- National Materials and Minerals Policy Research Development Act of 1980
- Materials Act of 1947, 30 USC § 601, as amended
- Section 402 of Reorganization Plan No. 3 of 1946
- 43 CFR 3400, 3500, 3600, 3715, 3802, and 3809

3.11.2 Soil Types Present

The Study Area is characterized by a variety of soils with some mixed bedrock outcrops in the northeastern portion of the Study Area. These soil units are shown on **Figure 3.11-1** and in **Table 3.11-1**. Total acreage of each soil type within the Study Area is also provided in **Table 3.11-1**. The reclamation suitability and erosion potential of the soils is presented in **Table 3.11-2.** The soil types listed in **Table 3.11-1** and **3.11-2** are present within a 0.5-mile area surrounding the Proposed Action route, ACC-certificated route, and the other Action Alternative routes.

Table 3.11-1 Total Acreage of Each Soil Type Within 0.5-mile of All Action Alternative Routes

NUMBER	SOIL TYPE	ACRES
109	Schenco-Rock outcrop complex, 25 to 60 percent slopes	6,280
44	Ebon very gravelly loam, 1 to 8 percent slopes	3,706
45	Ebon very gravelly loam, 8 to 20 percent slopes	3,659
113	Tremant gravelly loams	3,590
52	Gachado-Lomitas-Rock outcrop complex, 7 to 55 percent slopes	2,887
51	Gachado-Lomitas complex, 8 to 25 percent slopes	2,713
98	Pinamt-Tremant complex, 1 to 10 percent slopes	2,210
53	Gadsden clay	2,014
112	Tremant gravelly sandy loams	1,950
74	Luke-Cipriano association, 1 to 15 percent slopes	1,904
22	Contine clay loam	1,405
108	Schenco-Rock outcrop complex, 3 to 25 percent slopes	1,361
75	Mohall loam	1,203
71	Gunsight-Rillito complex, low precipitation, 1 to 40 percent slopes	1,087
119	Tremant-Suncity complex, 1 to 8 percent slopes	1,000
48	Ebon-Pinamt complex, 3 to 20 percent slopes	963

Table 3.11-1 Total Acreage of Each Soil Type Within 0.5-mile of All Action Alternative Routes (Continued)

NUMBER	SOIL TYPE	ACRES
58	Gilman-Momoli-Denure complex	876
110	Suncity-Cipriano complex, 1 to 7 percent slopes	870
70	Gunsight-Rillito complex, 1 to 25 percent slopes	829
11	Brios-Carrizo complex, low precipitation, 1 to 5 percent slopes	557
55	Gilman loams	502
76	Mohall loam, calcareous solum	481
3	Antho-Carrizo-Maripo complex	415
18	Cherioni-Rock outcrop complex, 5 to 60 percent slopes	403
13	Carefree-Beardsley complex	397
10	Brios-Carrizo complex, 1 to 5 percent slopes	377
46	Ebon-Contine complex, 1 to 8 percent slopes	354
12	Carefree cobbly clay loam, 1 to 8 percent slopes	338
29	Denure-Momoli-Carrizo complex	318
21	Cipriano very gravelly loam	166
49	Ebon-Pinamt complex, 20 to 40 percent slopes	151
31	Dixaleta-Rock outcrop complex, 25 to 65 percent slopes	83
78	Mohall clay loam, calcareous solum	70
115	Tremant-Antho complex, 1 to 5 percent slopes	49
103	Rock outcrop-Gachado complex, 5 to 55 percent slopes	42
80	Mohall-Tremant complex, 1 to 8 percent slopes	28
124	Valencia sandy loams	22
68	Gunsight-Cipriano complex, 1 to 7 percent slopes	17
23	Contine clay	10
47	Ebon-Gunsight-Cipriano association, 3 to 25 percent slopes	9
1	Antho sandy loams	7
77	Mohall clay loam	5

Source: NRCS (Natural Resources Conservation Service) 2011; SCS (Soil Conservation Service) 1972; SCS 1986

Table 3.11-2 Reclamation Suitability and Erosion Potential

NUMBER	SOIL TYPE	EROSION FACTOR *K*	EROSION POTENTIAL	RECLAMATION SUITABILITY
1	Antho sandy loams	.17-.20	Low	Good
3	Antho-Carrizo-Maripo complex	.02-.24	Low to Mod	Poor
10	Brios-Carrizo complex, 1 to 5 percent slopes	.02-.10	Low	Poor
11	Brios-Carrizo complex, low precipitation, 1 to 5 percent slopes	.02-.10	Low	Poor
12	Carefree cobbly clay loam, 1 to 8 percent slopes	.10-.24	Low to Mod	Poor
13	Carefree-Beardsley complex	.10-.28	Low to Mod	Poor
18	Cherioni-Rock outcrop complex, 5 to 60 percent slopes	N/A	N/A	N/A
21	Cipriano very gravelly loam	.20	Low to Mod	Poor
23	Contine clay	.15-.28	Low To Mod	Poor
22	Contine clay loam	.15-.28	Low To Mod	Fair
29	Denure-Momoli-Carrizo complex	.02-.24	Low To Mod	Poor
31	Dixaleta-Rock outcrop complex, 25 to 65 percent slopes	N/A	N/A	N/A
44	Ebon very gravelly loam, 1 to 8 percent slopes	.02-.10	Low	Poor
45	Ebon very gravelly loam, 8 to 20 percent slopes	.02-.10	Low	Poor
46	Ebon-Contine complex, 1 to 8 percent slopes	.02-.28	Low To Mod	Poor
47	Ebon-Gunsight-Cipriano association, 3 to 25 percent slopes	.02-.20	Low	Poor
48	Ebon-Pinamt complex, 3 to 20 percent slopes	.02-.15	Low	Poor
49	Ebon-Pinamt complex, 20 to 40 percent slopes	.02-.15	Low	Poor
51	Gachado-Lomitas complex, 8 to 25 percent slopes	.02-.15	Low	Poor
52	Gachado-Lomitas-Rock outcrop complex, 7 to 55 percent slopes	N/A	N/A	N/A
53	Gadsden clay	.32	Low To Mod	Poor
55	Gilman loams	.24-.55	Mod To High	Good

Table 3.11-2 Reclamation Suitability and Erosion Potential (Continued)

NUMBER	SOIL TYPE	EROSION FACTOR *K*	EROSION POTENTIAL	RECLAMATION SUITABILITY
58	Gilman-Momoli-Denure complex	.10-.55	Low To High	Good/Fair
68	Gunsight-Cipriano complex, 1 to 7 percent slopes	.10-.20	Low	Poor
70	Gunsight-Rillito complex, 1 to 25 percent slopes	.10-.32	Low To Mod	Poor
71	Gunsight-Rillito complex, low precipitation, 1 to 40 percent slopes	.10-.32	Low To Mod	Poor
74	Luke-Cipriano association, 1 to 15 percent slopes	.20-.37	Low To Mod	Poor/Fair
75	Mohall loam	.05-.32	Low to Mod	Fair
76	Mohall loam, calcareous solum	.05-.32	Low to Mod	Fair
77	Mohall clay loam	.05-.32	Low to Mod	Fair
78	Mohall clay loam, calcareous solum	.05-.32	Low to Mod	Fair
80	Mohall-Tremant complex, 1 to 8 percent slopes	.05-.32	Low to Mod	Fair/Poor
98	Pinamt-Tremant complex, 1 to 10 percent slopes	.05-.32	Low to Mod	Poor
103	Rock outcrop-Gachado complex, 5 to 55 percent slopes	N/A	N/A	N/A
108	Schenco-Rock outcrop complex, 3 to 25 percent slopes	N/A	N/A	N/A
109	Schenco-Rock outcrop complex, 25 to 60 percent slopes	N/A	N/A	N/A
110	Suncity-Cipriano complex, 1 to 7 percent slopes	.20-.32	Low to Mod	Poor
112	Tremant gravelly sandy loams	.28-.32	Mod	Poor
113	Tremant gravelly loams	.28-.32	Mod	Poor
115	Tremant-Antho complex, 1 to 5 percent slopes	.20-.32	Low to Mod	Poor/Good
119	Tremant-Suncity complex, 1 to 8 percent slopes	.10-.32	Low to Mod	Poor
124	Valencia sandy loams	.20-.32	Low to Mod	Good

Source: SCS 1986

3.11.3 Soil Hazards

3.11.3.1 Expansive (Shrink-Swell) Soils

Expansive soils shrink or swell with changes in moisture content. This characteristic is typically associated with high clay content soils. Changes in soil moisture could result from a number of factors, including rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soils are typically very fine-grained with high to very high percentages of clay. In central Arizona, the soils encountered in the areas of the Project and Action Alternative routes exhibit expansion potential that is generally low or low to moderate (AZGS 2002). Damage to structures can be related to soil characteristics, with expansive (shrink-swell) soils and collapsing soils causing the most problems. The causes of soil expansion or collapse are related to the type and amount of clay minerals in the soil, conditions under which the clay originated, and original density of the soil. A change in the moisture content of a soil can cause clay minerals to swell like a sponge or to shrink and collapse. Clays that are high in sodium can expand as much as a thousand percent when water is added (note that high sodium clays are not present in the Study Area). Structures may be damaged when a soil expands by as little as five percent. Expansion of clay minerals can cause walls and foundations to crack and roads and sidewalks to warp, in a manner similar to frost heaving. Upon drying, expansive soil shrinks, forming large, deep cracks or "popcorn" texture in surface exposures. Popcorn texture is the result of repeated shrink-swell cycles, producing marble-sized pellets. In extreme cases, cracks formed by drying clay can be large enough to mimic earth fissures. However, desiccation cracks are not as long or deep as earth fissures (AZGS 2002).

Expansive clays in Arizona commonly originate from volcanic ash deposits or sediment and alluvium that contain volcanic debris. Expansive soils are scattered throughout the Phoenix area. Shrink/swell potential is moderate to high in soils in terraces along the Gila and Salt Rivers, old alluvial fan surfaces, and scattered areas in the valley plains (NRCS 2002). Two areas in the Study Area have high potential for shrink-swell soils: east and north of LAFB and west of US 60, and east of the Agua Fria River near the Morgan Substation (NRCS 2002). Clay-rich soils in the Study Area with high shrink-swell potential include the Carefree, Contine, Gadsden, Mohall, and Tremant types (SCS 1986). **Figure 3.11-2** shows the general areas with high potential for shrink-swell soils in the Study Area (NRCS 2002).

3.11.3.2 Collapsible Soils

Collapsible soils are those that decrease in volume and settle when soil structure changes due to wetting of partially saturated subsoil. Typically, collapsible soils occur predominantly at the base of mountains, where Holocene alluvial fan and wash sediments have been deposited during rapid runoff events. Moreover, seismically induced ground settlement can occur during strong ground shaking in alluvium if deposits have a low relative density and are dynamically compacted and their volume is thereby reduced. Differential settlement can damage structures placed across such susceptible areas (AZGS 2002). Collapsible soils may occur along the Proposed Action route and the Action Alternative routes near the base of the southern Hieroglyphic Mountains.

3.11.3.3 Hydrocompaction

Because infrequent rain in the desert Southwest seldom penetrates more than a foot or two and then quickly evaporates, near-surface deposits usually have very low moisture content. The clay and silt in some of these deposits act like a glue, holding sand grains in place but leaving space between them. Upon wetting, the silt and clay lose their cohesion, and the sand grains move closer together and take up less space. This process, referred to as hydrocompaction, is especially troublesome in soils that have large amounts of silt. Potential for compaction is increased when a load, such as a transmission tower, adds weight to the soil. Hydrocompaction can occur years or even decades after a structure is built. The problem of hydrocompaction is not to be confused with the common occurrence of settling of fill properly compacted during placement. Damage from this type of settling may be prevented by compaction during placement or by waiting a few months before building to allow the fill to compact on its own. Hydrocompaction can mimic earth fissures. Damage from hydrocompaction tends to be restricted, and is commonly circular in area; earth fissures are narrow and long, typically extending over several hundred yards. Floodplain deposits susceptible to hydrocompaction are present along the Gila and Salt Rivers in the Phoenix region. Soils formed on the fine-grained lower parts of alluvial fans emanating from mountains and piedmonts also have potential for hydrocompaction (AZGS 2002). Soils that may be subject to hydrocompaction along the Proposed Action and Action Alternative routes include those with abundant clay and silt, particularly the Gadsden type.

3.11.3.4 Erosive Soils

Soil erosion is the process of moving soil particles or sediment by flowing water, wind or raindrop splash. Soil particles include dissolved or suspended solids, and bedload (larger soil particles such as sand or gravel). Sedimentation occurs when the soil particles are deposited in a water course. In the arid and semiarid watersheds of Arizona, climate, soils, topography, vegetation cover and hydrology all influence soil erosion. Soil erosion occurs whenever the soil surface is disturbed and protective vegetative cover is removed, as from clearing, grading, tilling, overgrazing, road building or fire. Different soils are more susceptible to erosion than others. Soils high in organic matter are less erodible than non-organic soils like sandy or silty soil (University of Arizona 2011). Soils that may be considered erosive along the Proposed Action and Action Alternative routes include sandy soils and in particular the Schenco soil type. **Table 3.11-2** describes the erosion potential of the mapped soil units in the Study Area.

3.11.4 Prime and Unique Farmlands

Prime and unique farmlands are designations assigned by the USDA. The USDA keeps account of prime farmland and unique farmland of the nation in cooperation with other interested agencies at the national, state, and local levels of government. The objective of the account is to identify the extent and location of important rural lands that help in producing food, feed, fiber, forage, and oilseed crops.

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to

economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

According to 7 CFR 657.5, unique farmland is land other than prime farmland that is used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods. Examples of such crops are citrus, tree nuts, olives, cranberries, fruit, and vegetables.

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978. Clayey and sandy loams of the following soils which occur in the Study Area are considered prime farmland, if irrigated (NRCS 2011) and these areas are shown in **Figure 3.11-1**:

- Contine
- Gilman
- Mohall
- Brios
- Tremant
- Rillito

3.12 TRANSPORTATION AND TRAFFIC

A portion of the information provided in the following subsections was provided by the Maricopa Association of Governments (MAG). MAG is a Council of Governments (COG) that serves as the regional agency for the metropolitan Phoenix area. MAG is the designated metropolitan planning organization (MPO) for transportation planning in the Maricopa County region. In addition to the data provided by MAG, information was taken from a report titled *Environmental Resource Report for Transportation and Traffic, Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012h). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review.

This section provides information on transportation and traffic as they relate to the Project, including regional access routes, air transportation, and rail transportation. The Study Area for this analysis includes the lands within and adjacent to the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes. The transportation and traffic

Study Area, as shown on **Figure 3.12-1**, is bounded by the area approximately 4.5 miles north of SR 74 on the north, Bell Road to the south, approximately 51st Avenue to the east, and approximately the 323rd Avenue alignment to the west. Transportation and traffic data were obtained and collected through literature review and online research. There were no field surveys or traffic studies conducted as part of this analysis.

3.12.1 Laws, Ordinances, Regulations, and Standards

Federal regulations relevant to this Project include CFR Title 49, Sections 171 through 177 and Sections 350 through 399 related to transportation of hazardous materials and motor carrier safety and would be applicable to state and federal highways. CFR Part 77, in combination with FAA regulations, identify the safe, efficient use, and preservation of the navigable airspace.

State regulations relevant to this Project by the Arizona Motor Vehicle Division (MVD) include licensing of private, commercial, and OHV, and aircraft registration. The ARS Title 28 identifies rules and regulations imposed on transportation throughout Arizona.

The City of Surprise and City of Peoria General Plans and Circulation Plans establish requirements and standards for development within each city, including roadway classification, cross-sections, and design standards.

3.12.2 Study Area Conditions

The major transportation corridors that provide access to the Study Area are US 60, SR 74, and SR 303. US 60 connects the Atlantic Coast in Virginia to western Arizona. It serves the metropolitan Phoenix area as part of the local freeway system connecting Phoenix to the Town of Wickenburg crossing through several west valley cities including Wittmann, Surprise, Peoria, Glendale, and West Phoenix. Additionally, US 60 serves as a freight corridor between Phoenix and Las Vegas, Nevada, by way of a regional connection with US 93 in Wickenburg. SR 74 is an east-west Arizona state route that connects I-17 (east of the Study Area) to US 60 just north of Morristown, Arizona. This route is 31 miles long, and serves Lake Pleasant Regional Park in northern Maricopa County. SR 74 also serves as a northern bypass to sections of US 60 in the Phoenix metropolitan area that are often congested with daily commuter traffic. SR 303 is a local state route that creates the outer loop of the Phoenix metropolitan freeway system. SR 303 is located in the southeastern-most portion of the Study Area and bisects US 60 near Deer Valley Road.

The Study Area is located within the planning areas of Peoria and Surprise, Arizona, northwest of the intersection of SR 303 and US 60. The Proposed Action route and the other Action Alternatives would be accessible from the north via SR 74 and I-17 and US 60 and SR 303 from the south.

3.12.2.1 Surface Transportation

The Study Area consists of a variety of existing roadways, including regional highways, local arterials, and collector streets. Existing regional highways in the Study Area include SR 74, US 60, and SR 303.The existing and projected AADT for identified regional highways within the Study Area is listed in **Table 3.12-1**.

Table 3.12-1 Regional Highways Annual Average Daily Traffic within the Study Area

ROAD-WAY	SEGMENT	EXISTING LANES [1]	EXISTING AVERAGE DAILY TRIPS[5] (# VEHICLES)
SR 74	East of US 60	2[2]	5,500
	West of Castle Hot Springs Rd.		5,700
	Between Castle Hot Springs Rd and New River Road		5,600
	Between New River Road and I 17		7,700
SR 303	East of US 60	4[3]	11,200
	Between Lake Pleasant Parkway and I 17		6,000
US 60	Between Dove Valley Road and 163rd Avenue	4-6[4]	9,300
	Between 163rd Avenue and SR 303		22,500
	South of SR 303		23,800

[1]Through lanes only. Does not include auxiliary lanes, on-ramps or off-ramps.
[2]ROW preservation is planned to accommodate a 10-Lane facility.
[3]SR 303 will be expanded to a 6-lane facility.
[4]US 60 reduces from 6 to 4-lanes North of SR 303.
[5]Existing ADT – Counts range in years from 2005 to 2011.
Source: T. Strow, MAG, personal communication July 25, 2012.

Local arterial and collector roads in the Study Area are a combination of dirt and paved with primary access coming from regional highways, including US 60, SR 74, and SR 303. The majority of local arterial and collector roads in the Study Area are either unimproved dirt or consist of only two lanes. Many of these roads are identified for future expansion based on the level of future residential and commercial development in the area. Future transportation projects identified and funded through the MAG Regional Transportation Plan (RTP) Arterial Life Cycle Program include capacity and intersection improvements along Sun Valley Parkway, Lake Pleasant Parkway, and Happy Valley Road. Future improvements throughout the Study Area will consist of expanding the majority of arterial streets to four- and six-lane roadways (MAG 2010).

Future regional highway projects are also identified in the MAG RTP for US 60, SR 74, and SR 303. The BLM has established a Transportation Corridor in the Bradshaw-Harquahala RMP along SR 74 (**Figure 3.12-1**) for future highway projects. Funded projects located throughout the Study Area include:

US 60 – Planned projects along US 60 throughout the Study Area include widening efforts to expand the roadway in the vicinity of SR 303 from four general purpose lanes to six. These improvements are identified in Phase III of the MAG RTP (FY 2016 – 2020).

SR 74 – ROW preservation for a potential future freeway facility. Funding for ROW acquisition has been identified in Phase V of the MAG RTP (FY 2026 – 2031). A final feasibility report was conducted for SR 74 in May 2010 and recommended that the ROW should be preserved for a potential 10-lane freeway (URS 2010).

SR 303 – The SR 303 corridor will be continuously developed as a new freeway facility throughout the Study Area. SR 303 will eventually include three general purpose lanes and one High-Occupancy Vehicle (HOV) lane in each direction. New highway construction and capacity improvements in the Study Area are identified in Phases II and III of the MAG RTP (FY 2011 – 2020).

3.12.2.2 Air Transportation

There are currently six airports or airstrips located within or in the immediate vicinity of the Study Area including Pleasant Valley Airport, LAFB Auxiliary Field #1, Ranta Airstrip Airport, Thunder Ridge Airpark, Castle Well Airpark, and Roesner Ranch Airport.

Pleasant Valley Airport – The Pleasant Valley Airport is located near the intersection of SR 74 and Lake Pleasant Parkway. It is a general aviation airport with three parallel runways and one cross wind runway. Pleasant Valley Airport is open to the public and serves single engine, light twin, helicopter, and glider aircraft (AirNav 2011a).

LAFB Auxiliary Field #1 - The LAFB Auxiliary Field #1 is located at the intersection of Happy Valley Road and 211th Avenue. This airfield is used by the LAFB for flight training throughout the year. It is located 15 miles northwest of LAFB and supports approximately 13,000 practice operations per year (LAFB 2011).

Ranta Airstrip Airport – The Ranta Airstrip Airport is located along Gates Road, west of the SR 74/US 60 intersection. This airport is a private facility with one gravel runway (AirNav 2011b).

Thunder Ridge Airpark – Thunder Ridge Airpark is located at 237th Avenue and Joy Ranch Road in Morristown. It is a private facility with an asphalt runway located within a residential airpark. The airpark has nine residential homes and hosts annual fly-in activities that regularly average 20 to 25 planes (AirNav 2011c).

Castle Well Airpark – The Castle Well Airpark is located north of SR 74 and east of US 60. It is a private facility with one asphalt runway for use by residents of the community (AirNav 2011d).

Roesner Ranch Airport - The Roesner Ranch Airport is located west of the intersection of 237th Avenue and SR 74, along the 8th Street alignment in Morristown. It is a private facility with one gravel runway (AirNav 2011e).

3.12.2.3 Rail Transportation

The BNSF rail line that intersects the Study Area is part of the 209-mile BNSF Phoenix Subdivision. Approximately 22 miles of the Phoenix Subdivision is located within the Study Area, along US 60, as shown on **Figure 3.12-1**. The railroad consists of a single-line track with periodic sidings that allow trains to pass each other, as necessary. The maximum operating speed on this section of the line is 49 miles per hour, and BNSF operates approximately eight to ten trains per day. However, projections for 2012 identified potential growth to nearly 17 trains per day. The BNSF ROW throughout this section of the Phoenix Subdivision varies from 75 feet to 200 feet in width.

3.13 VEGETATION RESOURCES, INCLUDING NOXIOUS AND INVASIVE WEEDS AND SPECIAL STATUS PLANTS

The information provided in the following subsections is taken from a report titled *Environmental Resource Report for Biological Resources Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012i). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review.

3.13.1 Laws, Ordinances, Regulations, and Standards

Endangered Species Act of 1973 (ESA; PL 85-624; 16 USC §§ 661, 664, 1008) - Federal agencies are required to consult with the USFWS to ensure that actions they authorize do not jeopardize the continued existence of any listed species, result in the destruction or modification of critical habitat, or cause a "take" (to harass, harm pursue, hunt, shoot, wound, kill, trap, capture, or collect) of any listed species.

Federal Noxious Weed Act of 1974 as amended by the Food, Agriculture, Conservation and Trade Act of 1990 (USC 2801 et. seq.) - The Weed Act of 1974 gave the US Secretary of Agriculture authority to declare plants "Noxious Weeds" and limit the spread of such plants without a permit. The 1990 Farm Bill requires that each federal land-management agency 1) designate a trained person in charge of a plant control program, 2) adequately fund the program, 3) implement cooperative agreements with the States, and 4) establish integrated management systems to control or contain the plants targeted under the agreements.

Federal Plant Pest Act (7 USC 150aa et seq.) - Prohibited the movement of plant pests from a foreign country into or through the United States unless authorized by USDA. Superseded by the Plant Protection Act of 2000 (P.L. 106-224, Title IV), which gave Animal and Plant Health Inspection Service broad authority to inspect, seize, quarantine, treat, destroy, or dispose of imported plant and animal materials potentially harmful to US agriculture, horticulture, forestry, and, to a certain degree, natural resources (7 USC 7701 et seq.).

Noxious Weed Control and Eradication Act (Public Law 108-412) - Requires that the Secretary of Agriculture establish a program to provide assistance to eligible weed management entities to control or eradicate noxious weeds on public and private lands.

Invasive Species EO 13112 (February 3, 1999) - Established the National Invasive Species Council (NISC) to ensure that federal programs and activities to prevent and control invasive species are coordinated, effective, and efficient.

American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the ESA (June 5, 1997; Secretarial Order 3206) - Establishes that federal agencies (DOI, NOAA) shall be responsible for 1) working directly with tribes to promote healthy ecosystems, 2) recognizing that Indian lands are not subject to the same controls as federal public lands, 3) assisting tribes in developing programs to promote healthy ecosystems, and 4) being sensitive to Indian culture, religion, and spirituality.

Arizona Native Plant Law - No protected native plant can be relocated or transplanted without permission and a permit from the ADA. The Arizona Native Plant Law requires a NOI before land clearing.

3.13.2 Vegetation Communities

The predominant native vegetation communities in the Study Area include Sonora-Mojave creosotebush-white bursage desert scrub and Sonoran palo verde-mixed cacti desert scrub (USGS 2004). In addition, a riparian forest/woodland vegetation community occurs along the Agua Fria River. Other native vegetation communities or cover types also occur in the Study Area in very low frequency and are described below.

Table 3.13-1 summarizes the vegetation communities within the ROWs associated with the Proposed Action route, the ACC-certificated route, and all other Action Alternative routes (refer to **Figure 3.13-1**). To compare the Proposed Action route with the alternative routes, acreage calculations for each vegetation community and land cover is provided in **Table 3.13-1**.

Table 3.13-1 Vegetation Communities and Land Cover (in acres)

(Footnotes at end of table.)

	CREOSOTE SCRUB	CACTI SCRUB	SALT SCRUB	UNVEG	RIP	MESQUITE SCRUB	TOTAL
Proposed Action (200 ft. ROW)	327	597	1	0	1	0	926
ACC-Certificated Route	3,613	4,572	16	1	10	1	8,213
Alternative 1 (200 ft. ROW and additional corridor)	329	3,678	1	0	3	0	4,011
Alternative 2 (200 ft. ROW and additional corridor)	327	1,547	1	0	3	0	1,878
Alternative 3 (200 ft. ROW)	341	590	1	0	1	0	933

Table 3.13-1 Vegetation Communities and Land Cover (in acres) (Continued)

(Footnotes at end of table.)

	CREOSOTE SCRUB	CACTI SCRUB	SALT SCRUB	UNVEG	RIP	MESQUITE SCRUB	TOTAL
Sub-alternative (200 ft. ROW)	17	82	0	0	1	0	100
Primary Segment Common to All Action Alternatives (200 ft. ROW)	25	70	0	0	0	0	95

Creosote Scrub = Creosote-White Bursage Desert scrub; **Cacti Scrub** = Sonoran Palo Verde Mixed Cacti Desert scrub; **Salt scrub** = Sonora Mojave Mixed Salt Desert scrub; **Unveg** = Barren Land and Open Water; **Rip** = North American Warm Desert Riparian; **Mesquite Scrub** = Apacherian-Chihuahuan Mesquite Upland Scrub
Source: Southwest ReGAP 2004

3.13.2.1 Creosotebush-White Bursage Desert Scrub

Creosotebush-white bursage desert scrub (creosote scrub) forms the vegetation community in broad valleys, lower bajadas, plains, and low hills in the Chihuahuan, Mojave, and lower Sonoran deserts where soils are arid and fine-textured (NatureServe 2011). This form of desert scrub is characterized by a sparse to moderately dense layer of small-leaved, drought-tolerant shrubs and deciduous herbs (NatureServe 2011). Shrubs tend to be widely spaced with little grass or other herbaceous cover between. Creosote (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) are the typical dominants, but a variety of other shrubs, dwarf-shrubs, and cacti can be present or form sparse understories (NatureServe 2011).

3.13.2.2 Sonoran Palo Verde-Mixed Cacti Desert Scrub

Sonoran palo verde-mixed cacti desert scrub is the typical vegetation community in hilly to mountainous terrain, foothills, breaks, and major incised channels in the region. This vegetation community develops on coarse, gravelly to rocky soils and outcrops (NatureServe 2011). Creosotebush and white bursage are often the most common plants in this plant community; however, foothill palo verde (*Parkinsonia microphylla*), blue palo verde (*Parkinsonia florida*), saguaro (*Carnegiea gigantea*), and ocotillo (*Fouquieria splendens*) are the common characteristic species of this plant community that dominate in site-specific areas (NatureServe 2011). Other leguminous trees like desert ironwood (*Olneya tesota*) and velvet mesquite (*Prosopis velutina*), other cacti (e.g., *Opuntia* sp., *Cylindropuntia* sp., *Ferocactus* sp.), and agave (*Avage* sp.) also occur as sub-dominant species.

3.13.2.3 Sonora-Mojave Mixed Salt Desert Scrub

Sonora-Mojave mixed salt desert scrub occurs in arid and semiarid environments within the Southwest that have fine, loamy soils that are saline or strongly alkaline (NatureServe 2011). This vegetation community usually has a sparse ground cover that ranges from 2 to 40 percent and includes many plant species with either drought-deciduous or succulent leaves

(NatureServe 2011). The dominant species include four-wing saltbush (*Atriplex canescens*), allscale (*A. polycarpa*), shadscale (*A. confertifolia*), desert holly (*A. hymenelytra*), and desert seepweed (*Suaeda suffrutescens*), which are all tolerant of high-salinity soils and low moisture (NatureServe 2011). This plant community is often a transitional community that develops after disturbances, particularly on abandoned agricultural fields.

3.13.2.4 Barren Land and Open Water

Barren land include areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulation of earthen material (NatureServe 2011). Generally, vegetation accounts for less than 15 percent of total cover. Open water is associated with Lake Pleasant and areas of open water, generally with less than 25 percent cover of vegetation or soil (NatureServe 2011).

3.13.2.5 North American Warm Desert Riparian

Two vegetation communities compose the broader category of North American warm desert riparian habitats. These include North American warm desert riparian mesquite bosque and North American warm desert riparian woodland and shrubland.

North American warm desert riparian mesquite bosque is scattered along washes and at established cattle tanks throughout the Study Area where the water table is 25 feet (8 meters) or less from the surface. These areas are flooded frequently during the winter rainy and summer monsoon seasons. This vegetation community is dominated by closed-canopied woodlands of mesquite that can grow to heights of 45 feet (14 meters) (NatureServe 2011). The understory consists of a variety of plants that include inland saltgrass (*distchilis spicata*), desert hackberry (*Celtis ehrenbergiana*), catclaw acacia (*Acacia greggii*), ground cherry (*Physalis sp.*), and other shrubs and herbs (NatureServe 2011).

The North American warm desert riparian woodland and shrubland community is scattered along the larger washes, at the CAP canal, and on the Agua Fria River and its larger tributaries where there is perennial or semiperennial surface water. Dominant trees include box elder (*Acer negundo*), velvet ash (*Fraxinus velutina*), Fremont cottonwood (*Populus fremontii*), Godding's willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*), netleaf hackberry (*Celtis laevigata var. reticulate*), and Arizona walnut (*Juglans major*) (NatureServe 2011).

Shrub dominants include sandbar willow (*Salix exigua*), false willow (*Baccaris* sp.), and desert willow (*Chilopsis linearis*) (NatureServe 2011). The vegetation is dependent upon annual or periodic flooding, sediment scour, and/or annual rise in the water table for growth and reproduction (NatureServe 2011). In the Study Area, this plant community occurs exclusively along the Agua Fria River south of Lake Pleasant to about SR 74, where riparian strands become smaller and more fragmented.

While these riparian communities are limited in extent, they have highly productive habitats that support a high diversity of plants, animals, and food resources. These areas are important ecological centers for wildlife and are particularly critical during periods of drought, which are frequent in the region.

3.13.2.6 Apacherian-Chihuahuan Mesquite Upland Scrub

Apacherian-Chihuahuan mesquite upland scrub occurs in the vicinity of mesquite bosques. Sonoran mid-elevation desert scrub is a transitional desert scrub community that typically occurs on the lower slopes of mountainous areas where the climate is too dry for chaparral to develop and where freezing temperatures during winter are too frequent and prolonged for many of the frost-sensitive species characteristic of Sonoran palo verde-mixed cacti desert scrub (NatureServe 2011). Although limited in total area, these vegetation communities can be high in biodiversity, similar to Sonoran palo verde-mixed cacti desert scrub and mesquite bosque habitats.

3.13.3 Special-Status Species

The assessment results from the Heritage Database Management System (HDMS) database for special status plant species indicated that suitable habitat or records for three special status plant species occur within three miles (five kilometers) of the Proposed Action route or other Action Alternative routes. This dataset was not available for the entire Study Area extent. The details of the legal protection, habitat requirements, habitat suitability, and local distributions of these species are described in **Table 3.13-2**.

Seven other plant species that are protected under the Arizona Native Plant Law were observed during field reconnaissance of the Study Area (also shown in **Table 3.13-2**). In addition, AGFD HDMS indicates records of occurrence for the straw-top cholla (*Cylindropuntia echinocarpa)* within three miles (five kilometers) of the Proposed Action route or other Action Alternative routes. Salvage restricted cactus species encountered during the reconnaissance survey included: tree cholla (*Cylindropuntia imbricata*), teddy bear cholla (*Cylindropuntia bigelovii*), California barrel cactus (*Ferocactus cylindraceus*), saguaro (*Carnegiea gigantea*), ocotillo (*Fouquieria splendens*), Engelmann's hedgehog cactus (*Echinocerus engelmannii*), and yellow-spine prickly pear (*Opuntia engelmannii* var. *flavispina*). The ADA list of highly safeguarded and salvage restricted plant species is provided in Appendix E of the Biological Resources Report (URS 2012i).

Table 3.13-2 Special Status Plant Species

(Footnotes at end of table.)

SPECIES	STATUS	HABITAT REQUIREMENTS	HABITAT SUITABILITY
Agave murpheyi Hohokam agave	ESA-SC BLM-S HSA	Found in well drained soil on benches or alluvial terraces of gentle bajada slopes above major drainages in desert scrub between 1,300 and 3,200 feet (400 – 975 m). Often found in association with pre-Columbian agricultural and settlement features.	Suitable habitat along river terraces in the northern part of Study Area. Species has been documented near Wickenburg and along the Agua Fria River in the vicinity of Lake Pleasant, approximately two miles (3.2 km) north of the Proposed Action route. Suitable habitat was not surveyed.

Table 3.13-2 Special Status Plant Species (Continued)

(Footnotes at end of table.)

SPECIES	STATUS	HABITAT REQUIREMENTS	HABITAT SUITABILITY
Allium bigelovii Bigelow's onion	SRA	Found in all Arizona counties except Apache County. Found on gentle slopes between 2,000 and 5,000 feet (610 to 1,525 meters), with dry rocky soil in open grassland, chaparral, and desert scrub communities.	Potential habitat within the Proposed Action route, near the Agua Fria River, south of SR 74. Suitable habitat was not surveyed.
Carnegiea gigantea Saguaro	SRA	Rocky slopes and well-drained flats below 3,600 feet (1,197 meters).	Suitable habitat within the Study Area. Found throughout Sonoran-palo verde mixed desert scrub in the Study Area during field reconnaissance. Most common in uplands within the Hieroglyphic Mountains.
Cylindropuntia bigelovii Teddybear cholla	SRA	Desert to rocky hillsides below 3,000 feet (915 meters)	Suitable habitat within the Study Area. Found throughout the Study Area during field reconnaissance. Expected along all route alternatives in both uplands and lowlands. Particularly prevalent along all routes east of US 60.
Cylindropuntia echinocarpa Straw-top cholla	SRA	Found along dry washes and mesas to 6,000 feet (1,830 meters). Creosotebush associations, desert scrub with Joshua trees, and piñon-juniper woodland.	Suitable habitat within the Study Area near washes associated with creosotebush habitats. Species has been documented near the White Tank and Hassayampa River Mountains. AGFD HDMS record of occurrence within three miles (five kilometers) of the Proposed Action route (refer to Appendix D of the Biological Resources Report; URS 2012i). Expected along the Proposed Action route from the Sun Valley Substation to US 60.
Cylindropuntia impbricata Tree cholla	SRA	Gravelly or sandy soils of hills, flats, valleys, plains, and washes, mostly in grassland	Suitable habitat within the Study area. Found in Study Area during field reconnaissance along the Proposed Action route from US 60 to the Agua Fria River, primarily outside of steep terrain. Found hybrids with teddybear cholla north of the Proposed Action route near SR 74 during reconnaissance survey of the Study Area.

Table 3.13-2 Special Status Plant Species (Continued)

(Footnotes at end of table.)

SPECIES	STATUS	HABITAT REQUIREMENTS	HABITAT SUITABILITY
Echinocerus engelmannii Engelmann's hedgehog cactus	SRA	Sandy and rocky flats, and hillsides below 5,000 feet (1,525 meters).	Suitable habitat within the Study Area. Found in Study Area during field reconnaissance near SR 74 in the Hieroglyphic Mountains. Expected along Proposed Action route and alternatives east of US 60.
Ferocactus cylindraceus California barrel cactus	SRA	Occurs along desert washes, gravely slopes and beneath desert canyon walls	Suitable habitat within the Study Area. Found in Study Area during field reconnaissance near SR 74 in Hieroglyphic Mountains and along wash margins in Sonoran palo-verde mixed desert scrub. Expected along all routes, particularly east of US 60.
Fouquieria splendens Ocotillo	SRA	Rocky, well-drained slopes below 5,000 feet (1,525 meters).	Suitable habitat within the Study Area. Found in Study Area during field reconnaissance in the Hieroglyphic Mountains, but may occur elsewhere along the Proposed Action route and the alternative routes east of US 60.
Opuntia engelmannii var. *flavispina* Yellow-spine prickly pear	SRA	Found in Sonoran Desert, sandy bajadas from 1,600 to 2,600 feet (490 meters to 790 meters).	Suitable habitat within the Study Area near washes. Species has been found near the Hassayampa River and White Tank Mountains. Found extensively in the Study Area during field reconnaissance. Expected throughout the Proposed Action route and alternative routes.

Notes:
Agencies: BLM = Bureau of Land Management; ESA = Endangered Species Act (1973 as amended)
Status Definitions: **ESA:** SC = species of concern (has shown recent population decline to warrant this agency—the only categorization to preempt decline and listing). **BLM:** S = sensitive (a species considered to have shown declines; BLM policy is to provide these species with the same level of protection as is provided for candidate species under *Bureau of Land Management Manual,* Section 6840.06C—that is, to "ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed." **State:** HSA = highly safeguarded plant in Arizona (no collection allowed); SRA = salvage restricted in Arizona (collection only with permit).

3.13.4 Invasive and Noxious Plant Species

Invasive plants are those species that have been introduced into an environment where they did not evolve. As a result, they usually have no natural enemies to limit their reproduction and spread. Noxious weeds are legally designated by a federal, state, or county government as a plant that is injurious to public health, agriculture, recreation, wildlife or property. In the Sonoran Desert, invasions of these species can alter the wildland fire regime, which can lead

to more frequent and intense fires that can destroy the non-fire adapted native plants and permanently alter the vegetation community and wildlife habitats in an area that burns.

A review of invasive and noxious plant species records in the Study Area indicated that one state noxious weed species and 10 invasive plant species occur regionally (USGS 2007). The results described here are based on existing records and field reconnaissance, but complete surveys of the Proposed Action route and other Action Alternative routes for invasive and noxious plants has not been completed.

Buffelgrass (*Pennisetum ciliare*) is a state regulated noxious weed that occurs primarily along major roadways within the Study Area. Saharan mustard (*Brassica tournefortii*) is an invasive species that is extremely fast growing and can smother native herbaceous plants and compete with shrubs for scarce resources. Saharan mustard and buffelgrass are major agents of changing historic fire regimes and unbalancing the ecology of native ecosystems in the region.

Other invasive species in the Study Area that are more or less prevalent but can have the same effects of changing fire regimes and changing the ecology of native ecosystems include rip-gut brome (*Bromus diandrus*), red brome (*Bromus rubens*), cheatgrass (*Bromus tectorum*), Bermuda grass (*Cynodon dactylon*), Russian thistle (*Salsola kali*), Mediterranean grass (*Schismus barbatus*), and wild oats (*Avena fatua*). Cheatgrass and red brome were observed during field reconnaissance and were widespread near roadways, on BLM land near SR 74, and near human settlements in the Study Area. Saltcedar (*Tamarix* sp.) occurs in washes, drainages, and roadside swales in many parts of the Study Area. It can nearly completely replace native vegetation by outcompeting native shrubs for available water and by increasing soil salinity. Salt cedar was observed during field reconnaissance and is a relatively common plant along the Agua Fria River. Red stem filaree (*Erodium cicutarium*) occurs widely in disturbed areas in the Study Area and may provide seed resources for some ant species and rodents.

3.14 VISUAL RESOURCES

The information provided in the following subsections is taken from a report titled *Environmental Resource Report for Visual Resources, Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012j). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review.

3.14.1 Laws, Ordinances, Rules, and Standards

<u>The BLM Land Use Planning Handbook (BLM 2005)</u> - The handbook states that VRM management classes shall be designated for all BLM land based on consideration of visual resource inventory data and management considerations for other land uses. Resource use and management activities shall be managed according to the VRM objectives established in the land use plan."

<u>Visual Resource Management System</u> - Visual resources on BLM-managed lands are managed per the VRM system as directed in the BLM 8400 – Manual Series: Visual Resource Management (BLM 1986). The VRM system provides the framework for

managing visual values by classifying all BLM-managed lands into one of four VRM classes. Classification of lands occurs during the RMP development process by considering the relative visual value of lands within the context of other resource and land management needs.

Maricopa County Zoning Ordinance - The Maricopa County Zoning Ordinance (Maricopa County 2012) established the Wickenburg Highway and SR 74 scenic corridor overlay zoning districts. The Wickenburg Scenic Corridor (**Figure 3.14-1**) encompasses lands within 2 miles of the edge of the ROW of US 60 from Bell Road to the Town of Wickenburg corporate limits. The ordinance sets standards for commercial use components such as building height, screening, signs, and architecture. The SR 74 Scenic Corridor (**Figure 3.14-1**) encompasses lands within 500 feet of the ROW centerline from approximately 0.5-mile west of the Agua Fria River to 1.5 miles east of US 60. (However, according to the City of Peoria, the SR 74 Scenic Corridor within their jurisdiction does not apply.) The ordinance sets standards for residential and nonresidential uses. Standards are set for components such as setbacks, heights, and screening. The ordinance states that utility lines are required to be buried. Utility lines are not defined in the ordinance; however, this requirement is clarified in the SR 74 Scenic Corridor Guidelines (Maricopa County n.d. c), a part of the Maricopa County 2020 Eye to the Future Comprehensive Plan. The guidelines state, "New utility lines should be located underground, except 69kV or greater electric transmission lines." Because this Project proposes a combined 230kV and 500kV transmission line, the ordinance does not apply to this Project.

City of Peoria General Plan - The City of Peoria's General Plan covers approximately 234 square miles of public, private, and State Trust lands. The Land Use Element of the Peoria General Plan describes how the City anticipates addressing future population and employment growth while promoting a development pattern that promotes a pedestrian-friendly environment; and integrates natural and manmade features in a manner consistent with the vision for the City of Peoria. Policy 3.B.4 (Chapter 8, Public Services and Facility element) would be applicable to visual resources in the portions of the Study Area that traverse Peoria. It states, "Promote the use of existing utility and major transportation corridors for new overhead utility siting to minimize visual and environmental impacts" (City of Peoria 2010). The General Plan also contains a utility corridor paralleling SR 74 (City of Peoria 2010), roughly corresponding with the ACC-certificated route.

Town of Buckeye General Plan - The Buckeye Planning Area encompasses approximately 600 square miles of land and is a mosaic of public, private, and federal land ownership as well as parcels of State Trust lands managed by ASLD. Land use designations in the planning area include residential, mixed use, commercial, industrial, agriculture, military, and open space. A majority of the land in the Planning Area is designated as low- to medium-density residential. One policy would be applicable to visual resources in the portions of the Study Area that traverse Peoria. It states, "Provide proper planning of utility corridors in order to mitigate environmental impacts on sensitive landscapes and natural resources."

3.14.2 Visual Resource Inventory

The BLM has a stewardship responsibility to identify and protect visual (scenic) values on public lands as directed in NEPA and FLPMA.

The BLM's process for this Project, and based on VRM, begins by preparing a visual resource inventory (VRI) for the public lands administered within an administrative boundary, either a BLM district or field office. The inventory consists of determining scenic quality ratings of various landscapes, the sensitivity levels of potential viewers, and the distance zones of the viewers to the landscapes, as follows:

Scenic Quality

Scenic quality rating units are scored A (high), B (moderate), or C (low). The ratings are based on the key factors of landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications (man-made features).

Viewer Sensitivity

Viewer sensitivity rating units are rated High, Medium, or Low. The ratings are based on factors such as type of users, amount of use, public interest, adjacent land uses, and special areas.

Distance Zones

Distance zones are identified as foreground-middle ground, background, and seldom seen. These are distances from travel routes or observation points. The foreground-middle ground zone is from 0 to 3-5 miles, the background zone is from 3-5 to approximately 15 miles, and the seldom seen zone is beyond the background zone and other areas not visible to travel routes or observation points.

Based on the interrelationships among these three inventoried values, an appropriate inventory class is assigned in accordance with the VRI class placement matrix. The VRI classes represent the existing visual value at the time of the inventory. The inventoried lands are placed into one of four VRI classes. The classes are defined as the following:

VRI Class I - Assigned to all special areas where the current management situation requires maintaining a natural environment essentially unaltered by man, such as Wilderness Areas, the wild section of the national wild and scenic rivers, and other congressionally and administratively designated areas where decisions have been made to preserve a natural landscape.

VRI Class II - Highest visual value assigned through the inventory process for this project and based on the combination of scenic quality, visual sensitivity levels, and distance zones.

VRI Class III - Moderate visual value based on the combination of scenic quality, visual sensitivity levels, and distance zones.

VRI Class IV - Low visual value based on the combination of scenic quality, visual sensitivity levels, and distance zones.

3.14.3 Visual Resource Management Objectives

The BLM designates VRM classes through an RMP effort establishing visual management objectives that proposed actions are required to meet under the RMP implementation. Through the planning effort, inventoried visual resource values are weighed, along with all the other resources, to designate a VRM class. The resulting VRM class designated in the RMP may differ from the VRI class for a given area due to resource allocation decisions

made in the RMP. VRM classes provide the visual management performance standards for the design, development, and rehabilitation of projects on public land.

The four management classes have the following objectives:

VRM Class I - To preserve the existing character of the landscape while providing for natural ecological changes. The level of change to the characteristic landscape should be very low and must not attract attention.

VRM Class II - To retain the existing character of the landscape. Development may be seen but should not attract attention of the casual observer. Any changes must repeat the elements of form, line, color, and texture found in the predominant natural features of the landscape.

VRM Class III - To partially retain the existing character of the landscape. Development may attract attention but should not dominate the view of the casual observer. Changes should repeat the elements of form, line, color, and texture found in the predominant natural features of the landscape.

VRM Class IV - To provide for development that requires major modification of the existing character of the landscape. Development may dominate the view and be a major focus of viewer attention. Every attempt should be made to minimize the impacts of the development through careful location, minimal disturbance, and repeating the elements of form, line, color, and texture (BLM 1986).

When a project is proposed for development on BLM lands, the agency performs an assessment of the potential visual impacts of the proposed project within the landscape. This assessment is referred to as a contrast rating. Locations are chosen to represent views of the potential project from which the assessments are performed. These key observation points (KOPs) represent typical and/or sensitive views of a project, such as from communities and well-traveled routes, or special project or landscape features such as hilltop locations. Photographs of the project site taken from the KOPs are used to create photographic simulations of the proposed project. The visual elements of the existing landforms/water, vegetation, and structures are compared to the visual elements of the proposed project, and the levels of contrast are determined. The contrast levels are compared to the VRM class objectives. If the objectives are not met, then the contrast rating is used to focus mitigation efforts to reduce the degree of impact in order for the project to meet the VRM objective.

The potential impacts are also used to determine if there would be changes to the scenic quality ratings, sensitivity levels, and distance zones associated with the VRI.

3.14.4 Visual Resources Inventory and Management within the Study Area

A VRI was conducted in 2010 by the BLM for land in the HFO planning area. The inventory classes were created after the 2010 Bradshaw-Harquahala RMP was approved, so the management classes in the RMP are based on an older inventory. The scenic quality ratings, viewer sensitivity ratings, and distance zones from the 2010 inventory were used to describe the affected visual environment for this Project (refer to **Figures 3.14-1**, **3.14-2**, and **3.14-3**, respectively).

VRM objectives are established for the BLM-managed public lands in the Study Area within the Bradshaw Harquahala-Planning Area. The BLM-managed lands within the Study Area

for visual resources consist of VRM classes II, III, and IV. The land from the Sun Valley Substation to approximately the 179th Avenue alignment is Class IV. The land from approximately the 179th Avenue alignment to the Morgan Substation in the BLM SR 74 transportation corridor and south is Class III, and north of the transportation corridor is Class II (**Figure 3.14-4**).

3.14.5 Description of Visual Resources, Sensitive Viewers, and Key Observation Points

The following sub-sections describe the visual characteristics, sensitive viewers, and KOPs specific to various portions of the Proposed Action and Action Alternative routes.

3.14.5.1 Selection of Key Observation Points

Teams of visual resource management specialists traveled the Study Area repeatedly, photographing and documenting the visual resources at numerous points. Views of the potential ROWs were considered from various angles and distances. The number and location of KOPs were determined by BLM based on an adequate representation of issues associated with the proposed and alternative routes and a range of viewers and viewing situations (**Figure 3.14-4**).

3.14.5.2 Format for Description of Visual Resources

The existing condition of visual resources is described in terms of form, line, color, and texture in the natural elements and human developments of the landscape; and the overall relative sense of naturalness and scenic qualities of the views. Photos from the KOPs (when available) are referenced to **Chapter 4**, where they are shown in conjunction with simulated views incorporating the transmission line.

3.14.5.3 Project Area Overview

The visual resources Study Area is within the North American Deserts Ecoregion (Level I division) (Commission for Environmental Cooperation n.d.) and the Sonoran Basin and Range subdivision (Level III division) (EPA 2010a, 2011a). The subregion is distinguished by palo verde-cactus vegetation including saguaro, cholla, and agave cacti.

The Study Area is within the Basin and Range Physiographic Province. The climate of the province is characterized by being the driest in the United States. With low average annual rainfall comes a wide variation in precipitation from year to year, and a tendency for the rainfall to be concentrated into brief and heavy showers, producing flash floods that cause erosion rather than perennial streams. The topography is characterized by mountain ranges that are roughly parallel. The basins between the ranges are relatively flat plains with gentle slopes next to the mountains (Fenneman 1931).

The Project region is in the Sonoran Desert subdivision of the physiographic province. The subdivision is characterized by being approximately 20 percent mountains and 80 percent plains. The mountains vary from hills and buttes up to mountains rising 4,000 feet above sea level. The desert plains mostly lie below 2,000 feet elevation (Fenneman 1931).

The economy of the region has historically been based on irrigated agriculture, livestock rising, and mining (Commission for Environmental Cooperation 1997). Today federal and

ASLD land includes commercial, recreational, range, and undeveloped lands. Private land includes residential, commercial, and industrial areas. The primary types of residential land adjacent to the Study Area are low- to medium-density suburban and rural areas.

Commercial areas are sparse within the Study Area, although some recreational lands include a commercial component. The industrial land is mainly used for manufacturing, landfill, and mining operations (URS 2012j).

Viewers in the Study Area can be categorized as residential and educational, recreational, travel, commercial, and industrial viewers. The individual viewer sensitivity to landscape changes range from low to high. Low sensitivity is typical for industrial viewers at warehouses, gravel pits, and utilities. Moderate sensitivity is typical for commercial viewers at office parks and retail stores, recreational viewers on OHV and golf courses, and travel viewers on major and arterial roads. High sensitivity is typical for viewers at residences and schools, recreational viewers in parks, on trails, and in picnic areas, and travel viewers on parkways, community gateways, and scenic routes (URS 2008).

3.14.5.4 Portion Common to All Action Alternatives

This portion of the Project begins at the Sun Valley Substation and extends to just north of US 60.

Landscape Characteristics

The portion of the proposed route that is common to the Action Alternative routes would start at the planned Sun Valley Substation and is on flat terrain with scattered trees and shrubs. It crosses over the CAP Canal within a designated utility corridor on BLM land. Landforms and vegetation are highly modified for the CAP Canal and associated pumping station. The route then crosses flat to rolling terrain with scattered saguaros, trees and shrubs, washes, and dirt roads. It parallels the CAP Canal and crosses over four short segments of the CAP Canal on BLM-managed public land.

The route would then turn north-northwest and parallels an existing Western Area Power Administration 500kV transmission line and service road approximately 500 feet west of the route centerline. The terrain is relatively flat to gently rolling with scattered shrubs. The route occasionally crosses shallow washes with scattered trees, and bladed and two-track dirt roads. After 2.2 miles, the route heads north and turns away from the 500kV transmission line. The route crosses scattered saguaros, the paved Patton Road, and an existing 69kV transmission line. At an approximate distance of 6.6 miles from the CAP Canal, the route turns east. It crosses Iona Wash, which has a well-defined sandy bed.

The route continues east across the western edge of the US 60 scenic corridor. The route crosses similar landforms and vegetation for 6.6 miles. It then turns north and continues for 3.5 miles. There are two houses approximately 0.1-mile away from the centerline of the route. The route crosses Trilby Wash, which has a well-defined sandy bed. The route also crosses bladed and two-track dirt roads, US 60, and the BNSF Railway track. The route does not parallel US 60 at any point.

BLM Visual Resources Inventory and Management

Most of the ROW between the location of the Sun Valley Substation and the point where the ROW diverges from the CAP would be located on BLM-managed public lands. The VRI indicates that the scenic quality for this area is C (low); sensitivity ranges from low to high; and the distance zones are foreground to middle ground.

The overall VRI Class is III with some IV in the southwest. This area is managed by the BLM as a utility corridor, and as such the VRM Class is IV.

Sensitive Viewers and Key Observation Points

Between the Sun Valley Substation location and just north of US 60, sensitive viewers would include residents and future residents of developments, and travelers on US 60.

KOP 1

KOP 1 is located approximately one mile northeast of the Sun Valley Substation location, within Pulte's Festival Ranch planned development, south of the ROW, looking northeast. Sensitive viewers from KOP 1 would be landowners of Pulte's Festival Ranch who would be looking at the proposed transmission line within the BLM utility corridor.

The landscape form viewed from this KOP (**Figure 4.14-1a**) is relatively flat and open. The view appears relatively natural; the area is sparsely vegetated with a limited variety of low grasses and shrubs, with a few small shrubby trees and occasional saguaro cactus. The skyline creates a strong horizontal line that is accentuated by a barb wire fence in the foreground and vegetation patterns in the foreground and middle ground. Fence posts in the foreground provide short, strong vertical lines. Saguaros in the middle ground and faint lattice structures in the background also provide short, subtle vertical lines. The predominant color in the landscape is shades of tan and brown in the exposed ground and short vegetation, punctuated by shades of green in the shrubs, trees, and cactus. The fence posts, wire, and lattice structures range from almost black to metallic gray. Vegetation appears patchy and dotted in the foreground, to stippled and lumpy in the middle ground. Visually the landscape appears relatively homogeneous with little variety in color, line, or texture.

KOP 2

KOP 2 is located northeast of the point where the ROW diverges from the CAP, within the Spurlock Ranch planned development, in the vicinity of Deer Valley Road and east of 275th Avenue, looking southwest. Sensitive viewers from KOP 2 would be landowners of the Spurlock Ranch development looking at the proposed transmission line within the BLM utility corridor.

The landscape form viewed from this KOP (**Figure 4.14-2a**) is relatively flat and open with mountains in the distance, and appears fairly natural with developments in the distance. The area is vegetated with uniform species of medium sized shrubs, with short grasses at the bases of the shrubs. The skyline creates a strong horizontal line that is accentuated by faint transmission lines in the distance. Shrub vegetation creates short, irregular vertical and diagonal lines in the foreground that become indistinct in the middle ground. Two different sets of lattice towers create faint vertical lines rising from the strong horizontal line at the skyline. The predominant color in the landscape is dark brown to reddish brown in the woody

stems of the shrubbery. Patches of green surround the bases of the shrubs, separated by the light tan of the bare ground in between. Vegetation and bare ground in the foreground appears feathery, dotted, and stippled, and becomes smooth in the middle ground to distance. Visually the landscape appears relatively homogeneous with little variety in color, line, or texture.

KOP 3

KOP 3 is located along US 60, south of the ROW crossing, looking west-northwest, and captures the views that northbound travelers on US 60 would have of the transmission line crossing the highway. KOP 3 is also within the Wickenburg Scenic Corridor. Sensitive viewers from KOP 3 would be travelers on US 60 looking at the proposed transmission line crossing US 60 near the Burlington Northern-Santa Fe commercial area and Broadstone Ranch development.

The landscape form viewed from this KOP (**Figure 4.14-3a**) is relatively flat. Distant mountains are barely perceptible through vegetation at the skyline. The dominant lines in the landscape are the vertical lines created by the divided highway, the painted lines on the highway, and the railroad tracks and an existing APS 69 kV transmission line that parallel the highway. The area between the divided lanes of US 60 and between US 60 and the railroad tracks is densely vegetated with a variety of short grasses, low shrubs, and a few trees. A few saguaros are visible in the middle ground. Visually, the landscape is dominated by diagonal lines created by US 60, the railroad tracks and associated railroad bed, and faint transmission lines. These strong diagonal lines converge with the strong horizontal line at the skyline. Monopole structures create short, repetitive vertical lines to the left of the highway. The predominant color in the landscape is shades of gray of the highway punctuated by white stripes, and the reddish-tan color of the exposed railroad bed. Vegetation is mottled tans, browns, and shades of green. The man-made structures appear smooth and linear, while the vegetation is feathery to stippled and lumpy. The presence of the divided highway, railroad tracks, and transmission line give the landscape a fairly developed feel.

3.14.5.5 Portion Common to the Proposed Action, Alternatives 1, 2, and 3

This portion of the Project begins just north of US 60 and extends to the intersection of SR 74 and the 179th Avenue alignment.

Landscape Characteristics

From just north of US 60, the route continues north and parallels the Thunder Ridge Airpark, a residential community with an airstrip, approximately 0.2 mile from the route centerline. A bladed dirt road parallels and is within the route for a portion of this segment. The route then turns to the east for 1.7 miles until reaching the end of the Wickenburg Scenic Corridor. The route crosses bladed and two-track dirt roads.

The route continues east for 5.2 miles across rolling landforms with numerous washes with well-defined sandy beds. Trees and saguaros are more abundant along these washes than the previous portions crossed by the route. Vegetation includes scattered trees and shrubs between the washes. The route crosses the paved two-lane 211th Avenue, bladed and two-track dirt roads, and a large wash. Several segments of dirt road parallel the route just slightly inside or outside of the Proposed Action 200-foot wide ROW. The portion of the route that is

common to the Proposed Action and Alternatives 1, 2, and 3 routes ends near the 179th Avenue alignment.

BLM Visual Resource Inventory and Management

No BLM-managed public lands are crossed in this portion of the Project; therefore no BLM VRI or VRM classes are assigned.

Sensitive Viewers and Key Observation Points

Sensitive viewers in this portion of the Project Area include residents in the vicinity of Thunder Ridge Air Park, travelers on 211th Avenue and SR 74; OHV recreationists; and travelers approaching SR 74 on the rock crushing/ranch road.

KOP 4

KOP 4 is located west of the ROW near Thunder Ridge Airpark, near the point where the ROW would turn east to follow the Joy Ranch Road alignment, looking east. KOP 4 is also within the Wickenburg Scenic Corridor. Sensitive viewers from KOP 4 would be residents and users of Thunder Ridge Airpark looking at the proposed transmission line passing behind (east of) the existing development.

The landscape form viewed from this KOP (**Figure 4.14-4a**) is relatively flat and open. The area appears modified and developed in conjunction with the residential area and airpark. Vegetation appears to be a variety of densely growing native shrubs, cactus, and trees, with some ornamental vegetation in landscaped areas. The horizontal line at the skyline in the middle ground is broken by structures, taller trees, and cactus. The visible roadway in the foreground creates a smooth curvilinear line, and the wall has broken horizontal lines creating a stair-step effect. The landscape lighting provides a series of short vertical and geometric lines. The structures in the middle ground create crisp horizontal and vertical lines. The buildings, wall, and landscaping gravel are all shades of cream, tan, reddish-tan, and brown, and the road is dark gray. The predominant vegetation color is shades of green, gray-green, and tan. The roadway, buildings, and wall are smooth and surrounded by landscaping rock that appears stippled. Vegetation is feathery to spiky.

KOP 5

KOP 5 (**Figure 3.14-5**) is located along SR 74 approaching Morristown, looking southeast. Sensitive viewers from KOP 5 would be eastbound travelers on SR 74. KOP 5 is within both the SR 74 and the Wickenburg scenic corridors looking at the proposed transmission line in the distance across undeveloped land.

The landscape viewed from this KOP appears very natural and is relatively flat creating a strong horizontal line at the skyline. Pyramidal mountains are visible in the distance, which adds faint, irregular horizontal lines. The vegetation is sparse clumps of grasses, shrubs, low trees, and species of cactus with several saguaros, which adds short and sometimes indistinct vertical lines in the foreground to middle ground. Looking south-southwest, in the far distance near the skyline developments appear as reflections and transmission line towers are faintly visible vertical lines. At the periphery of the view, the visible roadway and associated shoulders creates a strong diagonal line that diminishes into the distance. The predominant colors in the landscape are shades of tan, brown, and dark brown in the bare ground, and

shades of green, gray-green, and tan in the vegetation. Distant mountain ranges appear blue to purple. Bare ground in the foreground appears coarse and gravely, while vegetation is feathery to spiky. In the middle ground the vegetation has a soft and lumpy texture, while distant mountains appear smooth.

KOP 6

KOP 6 (**Figure 3.14-6**) is located approximately one mile southeast of KOP 5 along SR 74, looking south-southeast. Sensitive viewers from KOP 6 would be eastbound travelers on SR 74. KOP 6 is within the SR 74 Scenic Corridor looking at the proposed transmission line in the distance across undeveloped land.

The landscape viewed from this KOP appears very natural and is flat, forming a strong horizontal line at the skyline. Rugged mountain ranges can be seen, one somewhat faintly in the distance, creating short, jagged, irregular horizontal lines. The area is sparsely vegetated with low shrubs, a few trees and other species of cactus, and several saguaros, which create random, short, vertical lines that intersect the horizon. The edge of the highway and the painted white line create strong horizontal lines in the foreground. The predominant colors in the landscape are shades of tan and brown, dotted with shades of green vegetation. Mountains in the background are shades of blue. The highway in the foreground appears smooth, with a backdrop of feathery, lumpy, to blunt and spiky vegetation. Distant mountains appear smooth to slightly lumpy.

KOP 7

KOP 7 is located approximately one mile south of SR 74 on 211th Avenue, looking south. Sensitive viewers from KOP 7 would be travelers on 211th Avenue looking at the proposed transmission line crossing 211th to the south under the Proposed Action.

The form in the open landscape viewed from this KOP (**Figure 4.14-5a**) is relatively flat with jagged to pyramidal mountains in the distance. The view appears very natural, except for the tall communications tower that focuses the viewers' attention. The area either side of 211th Avenue is densely vegetated with a variety of native shrubs, small trees, and cactus, and contains several saguaros. The landscape is varied with numerous lines. The vegetation creates an irregular horizontal line in the middle ground, in front of a backdrop of distant mountains that create another irregular horizontal line at the skyline. 211th Avenue and its bladed shoulders create strong diagonal lines, and the communications tower creates a prominent vertical line in the center of the view. Saguaros create intermittent short vertical lines that appear to repeat the vertical line of the communications tower. The predominant color is the gray of the road surface of 211th Avenue, and reddish-tan of the bare road shoulders. The vegetation is shades of green, gray-green, yellow-green, tans, and browns. The distant mountains appear gray-blue. The roadway is smooth and the bare road shoulders are stippled to smooth. Vegetation is feathery to spiky. The distant mountains appear lumpy and grooved.

KOP 8

KOP 8 (**Figure 3.14-7**) is located at the intersection of the rock crushing/ranch road and SR 74, looking south. Sensitive viewers from KOP 8 would be travelers on the rock crushing/ranch road coming to a stop at the intersection, or travelers on SR 74 looking south

across undeveloped land at the proposed transmission line perpendicular to their view, approaching SR 74.

The landscape viewed from this KOP is flat with foreground views of the road cut and vegetation, and views of a mountain range in the distance, which together create an indistinct and broken horizontal line at the skyline. Aside from evidence of the highway the landscape appears very natural. The edge of the highway and the edge of the bare ground from the road cut both create strong, parallel, horizontal lines in the foreground. Vegetation consists of a combination of shrubs and low trees with several saguaros, creating short vertical lines against the sky. The predominant colors in the landscape are the gray of the highway and associated road cut, shades of green, gray-green, and a few tans in the vegetation. Distant mountains appear shades of blue. The road surface appears smooth, and the road cut gravely. Vegetation appears feathery to blunt.

KOP 11

KOP 11 is located within the Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ, along OHV Trail LP-9A, approximately five miles north of SR 74 and The Boulders Staging Area, looking south-southwest. Sensitive viewers from KOP 11 would be primarily OHV recreationists (although hikers or horseback riders could also access this area) looking across the southern portion of the SRMA at distant views of the proposed transmission line south of SR 74.

The view from this KOP (**Figure 4.14-18a**) is of an open landscape that is mostly lower in elevation than the KOP, with a few rolling hills in the middle ground and a mountain range in the distance. The landscape appears very natural. Distant flat lands form a strong horizontal line between the backdrop of the mountains and the rolling hills in the middle ground. The rolling hills create a soft, undulating horizontal line with subtle diagonal lines connecting. The only noticeable developments are several OHV trails that are visible as curvilinear lines of light tan. The trails are not obvious and do not attract attention. The area is fairly uniformly vegetated in patches of low shrubs, grasses, and numerous saguaros in shades of green and dark brown. Patches of exposed earth are shades of light to dark gray-tan. Vegetation appears clumped and feathery in the foreground, stippled in the middle ground, to smooth in the distance.

3.14.5.6 Portion Common to the Proposed Action, Alternative 1, and Alternative 2

This portion of the Project begins at the intersection of SR 74 and the 179th Avenue alignment and extends to the point where the Proposed Action and Alternative 1 route would cross to the north side of SR 74.

Landscape Characteristics

From 179th Avenue, the Proposed Action, Alternative 1, and Alternative 2 routes turn north for 0.2 mile and then parallel SR 74 for 2.1 miles. In this area, the landforms are rolling with washes with well-defined sandy beds with many trees in the washes. Vegetation includes scattered saguaros, trees, and shrubs between the washes. The route crosses bladed and two-track dirt roads. The route then turns north after passing two outlying hills of the Hieroglyphic Mountains. The route continues north for 0.2 mile to the edge of the SR 74

scenic corridor. At this point Alternative 2 route turns to the east, continuing into the Hieroglyphic Mountains. The Proposed Action/Alternative 1 route continues 0.1 mile further to SR 74.

BLM Visual Resource Inventory and Management

No BLM-managed public lands are crossed in this portion of the Project; therefore, no BLM VRI or VRM classes are assigned.

Sensitive Viewers and Key Observation Points

Sensitive viewers in this portion of the Project Area include travelers on SR 74 and OHV recreationists.

KOP 10

KOP 10 is located at The Boulders OHV Staging Area, which is located near the southern edge of the Castle Hot Springs SRMA and the Hieroglyphic Mountains RMZ (see **Section 3.9**, **Recreation and Special Designations** for detailed information), approximately one mile north of SR 74, looking south-southeast. Sensitive viewers from KOP 10 would be recreationists looking at the proposed transmission line south of SR 74 on undeveloped land.

The form in the open landscape viewed from this KOP (**Figure 4.14-14a**) is relatively flat in the foreground to middle ground, with low, jagged to pyramidal mountains in the middle ground, and other mountain ranges visible in the distance. The view is somewhat complex and picturesque with the gravel parking area and fence visible in the foreground, accessed by a curvilinear gravel road that winds through patchy dense native vegetation and numerous saguaros. The horizontal line at the skyline is subtle and indistinct, broken up by faint views of distant mountain ranges, and undulating mountains in the middle ground. Numerous saguaros create short, bold to indistinct vertical lines that generally do not break the skyline. Development in the distance is visible as white dots where structures reflect the sunlight. The gravel road and parking area are stippled reddish-tan to gray and white. Vegetation consists of patchy low shrubs, cactus, and numerous trees and saguaros. Vegetation is shades of green, gray-green, tans, and dark brown, feathery in the foreground to middle ground, and stippled to dotted in the distance.

3.14.5.7 Proposed Action and Alternative 1

This portion of the Project begins at the point where the Proposed Action and Alternative 1 route would cross to the north side of SR 74 and ends at the Morgan Substation.

Landscape Characteristics

The Proposed Action/Alternative 1 route continues north from SR 74 for 0.3 mile into a BLM-designated transportation corridor (BLM 2010a). The route crosses one heavy-use BLM inventoried-trail. The Proposed Action/Alternative 1 route turns east and northeast paralleling SR 74 for 5.1 miles. The route centerline is approximately 2,000 feet north of SR 74. The route crosses rolling to very rolling landforms for 1.3 miles with vegetation that includes scattered saguaros, trees, and shrubs between the washes. The saguaros are more obvious on the steeper hillsides. The route crosses a low, a moderate, and a heavy use trail (as inventoried by BLM). The route then crosses very hilly terrain for 1.2 miles and 2.1 miles of slightly lower and less rugged hills that contain one light use BLM trail. The route

continues east for 0.5 mile over flat to rolling terrain to a ridge, and crosses the paved Christian Church Camp Road (also referred to as Church Road; moderate use BLM trail) and an informal recreation use area with a network of dirt roads (heavy use BLM trail). The trees and shrubs become scattered and the density of saguaros appear to be the same as the previously described portions of the route north of SR 74. The route turns south for 0.4 mile to SR 74 and crosses over a light-use BLM trail.

The Proposed Action/Alternative 1 route continues south of SR 74 for 0.2 mile and merges into a route common to Alternative 2. The route centerline crosses a moderate use BLM trail. The route turns east for 1.2 miles paralleling SR 74. The route centerline is approximately 800 to 900 feet south of SR 74. The route crosses low rolling hills with vegetation that includes scattered saguaros, trees, and shrubs between washes. The route crosses a heavy-use BLM trail that parallels a sandy bottom wash and another heavy-use trail south of the end of Castle Hot Springs Road.

The route continues to parallel the south side of SR 74 for two miles. The vegetation is similar to the vegetation on BLM land north of SR 74, but the terrain is less hilly and more rolling for about 1.5 miles. The route crosses a sandy bottom wash and several two-track roads. The route then descends into the Agua Fria valley. The terrain steepens then flattens and the trees are dense along the braided river channels. The route crosses the Maricopa Trail, the main trail of the Maricopa County Regional Trail System. The route then crosses two-track roads, rises out of the Agua Fria valley bottom and turns south for 0.9 mile. The route leaves the scenic corridor and crosses the Beardsley Canal, two-track roads, and a single track OHV course. The route turns east for 0.6 mile and crosses the Beardsley and Waddell canals and two-track dirt roads, ending at the Morgan Substation.

BLM Visual Resource Inventory and Management

The VRI indicates that the scenic quality for the BLM-managed public lands north of SR 74 is B (moderate); sensitivity is high; and the distance zones are foreground to middle ground. The overall VRI Class is II. The VRM Class is Class III in the existing BLM transportation corridor, immediately north of SR 74, and for the "key" shaped parcel of BLM-managed public lands south of SR 74. North of the transportation corridor the VRM Class is Class II.

Sensitive Viewers and Key Observation Points

Sensitive viewers in this portion of the Project Area include travelers on SR 74, viewers from the Quintero Development and Lake Pleasant Regional park; and OHV recreationists.

KOP 12

KOP 12 is located at a golf course overlook within the existing Quintero Development, approximately one mile north of SR 74, looking southeast. Sensitive viewers from KOP 12 would be golfers and residents of Quintero looking across the southern portion of the SRMA at the proposed transmission line north of SR 74.

The landscape viewed from this KOP (**Figure 4.14-15a**) is partially at a lower elevation than the KOP and is relatively open with flat to somewhat hilly landforms in the foreground to middle ground, with angular gentle mountains in the middle ground and distance. The rolling hills and mountains form an undulating horizontal line at the skyline that flattens as it moves away from the hills. Mountains in the distance serve as a backdrop to a portion of the

flattened horizontal line. The hills and low mountains in the middle ground create soft diagonal lines. The view is complex with a mixture of natural areas and man-made developments. The majority of the area is vegetated with a dense mixture of shrubs, cactus, and low trees, with numerous saguaros that is colored shades of green, brown, and tan. The boundary between the golf course turf and the native vegetation is a crisp horizontal line that repeats the other horizontal lines in the scene. The golf course turf is variegated shades of bright green that contrasts strongly with the muted shades of green in the native vegetation. The saguaros create numerous subtle short vertical lines that do not break the skyline. In the foreground to middle ground the vegetation is feathery and fades to stippled and dotted in the middle ground, and to smooth in the distance.

KOP 13

KOP 13 is located approximately one mile north of SR 74 within the Castle Hot Springs SRMA along OHV trail LP-1, and approximately two miles east of the southernmost point of the Quintero development, looking south-southwest. Sensitive viewers from KOP 13 would be single-track OHV recreationists looking across the southern portion of the SRMA at the proposed transmission line north of SR 74.

The landscape viewed from this KOP (**Figure 4.14-16a**) is at a lower elevation and is somewhat open, but surrounded by low rolling hills and rugged buttes that make it feel slightly enclosed. Looking southwest, the landscape flattens and provides distant views of low mountain ranges. The skyline forms a strong horizontal line that undulates slightly with the distant mountains. The surrounding rolling hills create soft curvilinear lines that focus the view through the gentle valley, out into the flatter terrain in the distance. The area is vegetated with a patchy dense combination of low trees, numerous saguaros, and a few other species of cactus. Single-track OHV trails are visible in the landscape as light tan to gray curvilinear lines, but are not obvious and do not attract attention. Otherwise, no man-made structures are noticeable; the view appears very natural and picturesque. The numerous saguaros are evenly distributed in the foreground and middle ground, and create short, dark vertical lines that do not break the skyline. Vegetation is shades of green, gray-green, and yellow-green, and dark brown. Exposed ground in between vegetation patches is light tan to gray. The vegetation is feathery to clumped in the foreground and middle ground, and fades to stippled in the middle ground, and almost smooth in the distance. Distant mountain ranges are jagged blue-gray.

KOP 16

KOP 16 is located at the Lake Pleasant Regional Park campground, looking southwest. Sensitive viewers from KOP 16 would be campers in the campground and other recreationists looking across the natural landscape at the proposed transmission line south of and parallel to SR 74.

The landscape viewed from this KOP (**Figure 4.14-20a**) is at a somewhat lower elevation; is open and flat to slightly undulating with a few surrounding low hills, and mountains in the distance. The hills and backdrop of mountains create a broken, undulating horizontal line at the skyline that is repeated with appearances of horizontal lines created by vegetation patterns in the flatter areas. Scattered hills create short, subtle, curvilinear and diagonal lines. One short segment of dirt road is visible as a reddish-tan curvilinear line; otherwise, no man-

made features are visible, and the landscape appears very natural. The area is sparsely vegetated predominantly with low shrubs and cactus, and a few trees and saguaros. The saguaros punctuate the otherwise fairly horizontal landscape with a few short and irregularly spaced vertical lines. The vegetation is mostly shades of tan, brown and gray, with scattered clumps of green trees, and a few gray-green saguaros. The exposed ground is shades of tan with red and gray tones. Vegetation is feathery in the foreground, becoming dotted and stippled in the middle ground, to smooth in the distance. Visually the landscape appears somewhat homogeneous; the hills add some visual interest to an area with little other variety in color, line, or texture.

KOP 19

KOP 19 is located at the intersection of the Quintero access road and SR 74, looking south. Sensitive viewers from KOP 19 would be Quintero residents and recreationists leaving the golf course looking at the proposed transmission line south of and parallel to SR 74.

The landscape viewed from this KOP (**Figure 4.14-19a**) is flat to gently rolling, with middle ground views of low hills primarily to the east of the direct south view from the KOP. Striping on SR 74 in the foreground creates strong horizontal lines. Vegetation in the foreground creates an indistinct horizontal line. The backdrop of mountain ranges in the distance creates a subtle irregular horizontal line at the skyline. The horizontal lines are broken by short vertical lines created by the numerous saguaros. A few fence posts visible in the foreground repeat the short-vertical lines of the saguaros. Vegetation in the foreground appears patchy and dense, comprised of small trees, low shrubs, saguaros, and other cactus species. The vegetation is mostly shades of green, gray-brown, and brown. The exposed ground is shades of tan with tinges of red in places. Distant mountain ranges are jagged blue-gray. Vegetation is feathery in the foreground with scattered saguaros that appear thick and blunt.

Linear KOP

The portion of SR 74 traversing the low rolling hills, mountains and rugged buttes of the Hieroglyphic Mountains has scenic values. Because of this, the entire stretch of SR 74 roughly between the Agua Fria River and just past the westernmost crossing of SR 74 by the ROW is one linear KOP, which is approximately 10 miles long. Travelers either direction on SR 74 enter the linear KOP from areas that are relatively flat, dominated by horizontal lines, with little variety in color or form. After passing the linear KOP entry points, views of development diminish, and the landscape appears more natural and unmodified, as well as scenic. Moving through the linear KOP, SR 74 has gentle curves that wind through the low hills and buttes. The views become more enclosed and in some cases focus the viewers' attention on more prominent formations. Saguaros that are sparse outside the linear KOP at higher elevations occur in dense stands on the hillsides and saddles between hills. Within the linear KOP, topography, road cuts, and taller vegetation sometimes limit middle ground views from the highway. As travelers on SR 74 approach the end points of the linear KOP, the landscape is noticeably flattening out; vegetation becomes less diverse and more uniform, lines are predominantly horizontal, and the views less scenic.

Within the linear KOP, specific observation points have been established to evaluate the impacts to the views of eastbound and westbound traffic, to the BLM VRI, and contrast on

lands other than those managed by the BLM. KOP 17 is the westbound linear KOP, and KOP 18 is the eastbound linear KOP. Specific observation points are denoted alphabetically (i.e., "a", "b", etc.).

KOP 17a

KOP 17a (no photograph taken at this KOP) is located just east of the Agua Fria River along SR 74, looking west. Sensitive viewers from KOP 17a would be westbound travelers on SR 74 looking at the proposed transmission line coming in from the south perpendicular to SR 74, and then paralleling the south side of SR 74 going into the distance.

KOP 17a is the entry point for the westbound linear KOP along SR 74. From KOP 17a, the landscape transitions from relatively flat topography in the foreground to low hills and buttes in the middle ground and background that give the area scenic and natural appearing qualities. The strong horizontal line at the skyline is irregular with domed and pyramidal hills. The highway with its associated shoulders and painted lines creates a strong diagonal line that becomes weaker and curvilinear in the distance. Wood poles supporting the existing power line paralleling the highway create strong vertical lines in the foreground to middle ground. Vegetation is sparse, consisting primarily of low grasses and shrubs, with an occasional saguaro visible. The predominant colors in the landscape are the gray of the highway; tan, brown, and reddish brown in the bare ground; and tans and browns with some shades of green in the vegetation. Textures are feathery to gravely in the foreground, stippled in the middle ground, to smooth in the distance.

KOP 17b

KOP 17b is located along SR 74 just east of the proposed easternmost crossing of SR 74 by the transmission line, looking west-southwest from the north side of the highway. Sensitive viewers from KOP 17b would be westbound travelers on SR 74 looking at the proposed transmission line at the easternmost crossing.

The landscape viewed from this KOP (**Figure 4.14-7a**) is somewhat enclosed by surrounding hills and buttes, and road cuts through the hills. The prominent butte just to the south of SR 74 creates a picturesque feature landscape, focusing the viewer's attention on the butte. The gentle hills and butte create an undulating horizontal line at the skyline. Strata in the butte and surrounding hills create subtle horizontal and diagonal lines that are accentuated by vegetation patterns and shadows. SR 74 and its associated road shoulders create strong diagonal lines. The area is sparsely vegetated with a variety of grasses, low shrubs, small trees, and numerous saguaros, which create short vertical lines that are skylined along the saddle between the prominent butte and the adjacent hill. The predominant colors in the view from this KOP are shades of brown with dots of various shades of green. Exposed ground ranges from dark brown to light tan, gray, and almost white. Vegetation in the foreground is feathery to spiky, and becomes dotted to stippled in the middle ground.

KOP 17c

KOP 17c is located in the same general area as 17b, but views the Proposed Action route from the south side of SR 74, looking northwest. Sensitive viewers from KOP 17c would be westbound travelers on SR 74 looking at the proposed transmission line north of SR 74 within the SRMA.

The landscape viewed from this KOP (**Figure 4.14-9a**) is somewhat enclosed by surrounding hills and buttes, and road cuts through the hills. The landscape is characterized by a series of low hills in the middle ground of the view that create an undulating and somewhat broken horizontal line at the skyline. The hills create subtle curvilinear and diagonal lines in the middle ground. The area is sparsely vegetated with a variety of grasses, low shrubs, small trees, and numerous saguaros, which create short vertical lines. The predominant colors in the view from this KOP are a mixture of browns and various shades of green. Exposed ground ranges from dark brown to light tan, gray, and almost white. Vegetation in the foreground is feathery to spiky, and becomes dotted to stippled in the middle ground. The combination of the rolling hills, variety of vegetation, and presence of saguaros in a relatively natural appearing setting makes the view visually appealing.

KOP 18a

KOP 18a (no photograph taken at this KOP) is located along eastbound SR 74, approximately one mile west of the westernmost crossing of SR 74, looking east. Sensitive viewers from KOP 18a would be eastbound travelers on SR 74 looking at the transmission line's proposed westernmost crossing of SR 74. Eastbound travelers on SR 74 come up over a small rise and the Project Area comes into view ahead. The landscape transitions, from this point eastward, from relatively flat, open terrain vegetated mostly with low shrubs and small trees, to an area with low rolling hills that are vegetated with a variety of shrubs, cactus, and trees. As the elevation increases traveling eastward, the density of stands of saguaro cactus increases, which contributes to the level of visual interest and scenic quality of the area. This point was selected as the eastbound entry point for the linear KOP because the Project would come into clear view at this point and eastbound travelers would clearly see the changes in topography, vegetation, and overall scenic quality.

KOP 18b

KOP 18b is located along eastbound SR 74, just west of the westernmost crossing of SR 74, looking east. Sensitive viewers from KOP 18b would be eastbound travelers on SR 74 looking at the proposed transmission line's proposed westernmost crossing of SR 74 from the south side to the north side, then paralleling SR 74 going into the distance.

The landscape viewed from this KOP (**Figure 4.14-10a**) is relatively flat and open in the foreground, and transitions to low rolling hills in the middle ground. The landscape is characterized by a series of low hills in the middle ground of the view that create an undulating and somewhat broken horizontal line at the skyline. The hills create subtle curvilinear and diagonal lines in the middle ground. Vegetation is patchy, with some patches densely vegetated with small trees, shrubs, and a variety of cactus; interspersed with patches that are sparsely vegetated or bare ground. Most of the vegetation appears soft and lumpy. Numerous saguaros create short vertical lines. The predominant colors in the landscape are the gray of the highway and road shoulders surrounded by shades of green dotted with yellow in the foreground. The colors transition to gray-green, tans, and browns in the middle ground. Textures range from fine and feathery in the foreground, to dotted and stippled in the middle ground.

KOP 18c

KOP 18c is located along eastbound SR 74, near the midpoint of the segment of the transmission line that lies north of SR 74, looking northeast. Sensitive viewers from KOP 18c would be eastbound travelers on SR 74.

The landscape viewed from this KOP (**Figure 4.14-12a**) is somewhat enclosed in the foreground by the surrounding low hills and the road cut on the north side of SR 74. The enclosed nature of the landscape surrounding the road cut focuses the viewer's attention on the hills in the middle ground and coarse mountains in the distance, which create an uneven weak horizontal line at the skyline. From this KOP the area in the foreground appears sparsely vegetated with a few trees and shrubs, and several saguaros that create short, vertical lines that break the skyline in some cases. Delineators along the highway repeat the short vertical lines created by the saguaros. The highway and associated guard rail are curvilinear. Aside from the gray color of the highway, the predominant color in the landscape is the reddish tans and grays of the bare ground. The distant hills and mountains appear tan, brown, and gray-green to blue. Bare ground in the foreground appears coarse and gravely, and the vegetation is feathery to spiky. In the distance the hills and mountains appear patchy.

KOP 20

KOP 20 is at the intersection of Castle Hot Springs Road and SR 74, looking south. Sensitive viewers from KOP 20 would be southbound travelers on Castle Hot Springs Road who are traveling at relatively low rates of speed (35 mph or less), preparing to come to a stop at the intersection. Sensitive viewers would be looking at the proposed transmission line south of the intersection paralleling SR 74.

The landscape viewed from this KOP (**Figure 4.14-17a**) is comprised of low, gentle rolling hills that create a somewhat enclosed feeling. There is a saddle between two low hills south of SR 74 that southbound viewers look through and glimpse distant views of the skyline, which creates a short horizontal line in the center of the view. The hills are sparsely vegetated with clumps of grasses, a few shrubs and small trees, and numerous saguaros, which create short vertical lines against the sky. The guard rail at the intersection creates a strong horizontal line in the center of the view. Castle Hot Springs Road is crossed by a small electric line that turns north to parallel Castle Hot Springs Road. Poles that can be seen peripherally repeat the vertical lines of the saguaros. The existing power line, traffic signs, delineators, and guard rails accentuate the human developments over the natural environment at the intersection. The predominant colors in the landscape are a combination of tans, browns and greens. Vegetation appears feathery to spiky; bare ground appears coarse and rocky.

3.14.5.8 Alternative 2

This portion of the Project begins at the point where the Proposed Action and Alternative 1 route would cross to the north side of SR 74, continues along the south side of SR 74, and ends at the point where the Proposed Action and Alternative 1 route returns to the south side of SR 74.

Landscape Characteristics

The Alternative 2 route parallels SR 74. The route centerline is approximately 500 feet south of the road. From the point where the Proposed Action route turns north to cross SR 74 at approximately 163rd Avenue, the Alternative 2 route continues east for 0.9 mile and crosses rolling landforms with sandy washes. Vegetation includes saguaros, trees, and shrubs with more trees along the washes. The route crosses two two-track dirt roads and one trail. It then crosses the Hieroglyphic Mountains and continues east for 2.3 miles. The landforms in this area are hills interspersed with lower rolling terrain and small washes. The Alternative 2 route generally stays to the north or on the north slope of higher mountains. The vegetation includes saguaros, trees, and shrubs with more trees along the washes. The route criss-crosses eight bladed and two-track dirt roads. The route then crosses lower rolling terrain with washes with well-defined sandy bottoms for 1.1 miles. The route crosses one two-track road. Near the eastern end of the segment the route crosses the north slope of a hill.

The Alternative 2 route continues east onto BLM land for 0.8 mile and then merges with the Proposed Action/Alternative 1 route. The terrain is low and rolling except for a prominent butte that the route crosses on its north slope. The butte is the most prominent landform along SR 74 in the Study Area. The route crosses one wash with a well-defined sandy wash bottom.

BLM Visual Resource Inventory and Management

The VRI for BLM-managed public lands south of SR 74 indicates that the scenic quality for this area is B (moderate); sensitivity is high; and the distance zones are foreground to middle ground. The overall VRI Class is II. The VRM Class is Class III.

Sensitive Viewers and Key Observation Points

Sensitive viewers in this portion of the Project Area include travelers on SR 74 and recreationists in portions of the SRMA where the south side of SR 74 is visible.

KOP 13

See the description for KOP 13 under **Section 3.14.5.7**. Under Alternative 2 sensitive viewers would be looking at the proposed transmission line paralleling the south side of SR 74 (**Figure 4.14-16a**).

KOP 17d

KOP 17d is located along SR 74, along the portion of the Alternative 2 route that would be located south of SR 74 (while the Proposed Action would be north of SR 74), looking southwest. Sensitive viewers from KOP 17d would be westbound travelers on SR 74 looking at the proposed transmission line paralleling the south side of SR 74.

The landscape viewed from this KOP (**Figure 4.14-23a**) is comprised of low hills that give it a somewhat enclosed feeling. The hills create an undulating horizontal line in the middle ground at the skyline. Viewers catch glimpses of the skyline in the distance with angular mountains though the saddles between the hills. Vegetation is patchy, with some patches densely vegetated with small trees, shrubs, and a variety of cactus; interspersed with patches that are sparsely vegetated or bare ground. Most of the vegetation appears soft and lumpy. Numerous saguaros create short vertical lines. The highway with the associated guard rail and painted lines create strong diagonal lines. The upright posts supporting the guard rail

create regular, repetitive vertical lines. The predominant colors in the landscape are the gray of the highway and road shoulders surrounded by tans and browns of bare ground, and shades of green dotted with yellow in the vegetation in the foreground. Vegetation appears feathery to spiky, interspersed with the gravely bare ground. The highway and guard rail appear smooth. Aside from the highway, the landscape appears very natural and scenic.

KOP 18d

KOP 18d is located along SR 74, along the portion of the Alternative 2 route that would be located south of SR 74 (while the Proposed Action would be north of SR 74), looking southeast. Sensitive viewers from KOP 18d would be eastbound travelers on SR 74.

The landscape viewed from this KOP (**Figure 4.14-24a**) is comprised of low hills that give it a somewhat enclosed feeling. The hills create an undulating horizontal line in the middle ground at the skyline. Viewers catch glimpses of the skyline in the distance at the road cut, revealing mountain ridges that create somewhat muted horizontal lines at the skyline. The top of a prominent butte is visible south of SR 74. Vegetation is patchy, with some patches densely vegetated with small trees, shrubs, and a variety of cactus; interspersed with patches that are sparsely vegetated or bare ground. Most of the vegetation appears soft and lumpy. Numerous saguaros create short vertical lines. The highway with the associated guard rail and painted lines create strong curvilinear lines. The predominant colors in the landscape are the gray of the highway and road shoulders surrounded by tans and browns of bare ground, and shades of green in the foreground to middle ground. Vegetation appears feathery to spiky, interspersed with the gravely bare ground. The highway and guard rail appear smooth. Aside from the highway, the landscape appears very natural and scenic.

KOP 20

See the description for KOP 20 under **Section 3.14.5.7**.

3.14.5.9 Alternative 3

This portion of the Project begins at the intersection of SR 74 and the 179th Avenue alignment, extends south to the Carefree Highway alignment, continues east along the Carefree Highway Alignment, turns northeast to parallel the Westwing/Raceway common corridor, and ends at the Morgan Substation.

Landscape Characteristics

The Alternative 3 route diverges from the route common to the Proposed Action and Alternatives 1 and 2 routes at 179th Avenue. Alternative 3 travels south along the 179th Avenue alignment for 2.0 miles. The terrain is gently rolling and crosses mainly small washes. Vegetation includes saguaros, shrubs, and trees. The trees are mainly along the small washes. The route crosses two two-track dirt roads and parallels a dirt road for about one mile. The route then turns east along the Carefree Highway alignment and continues for 2.1 miles crossing many north-south washes of various sizes, including Padelford Wash, a large braided wash. The route crosses five bladed and two-track roads and parallels a two-track road for approximately one mile.

The Alternative 3 route continues east along the Carefree Highway alignment and crosses the outlying hills of the Hieroglyphic Mountains. The route then continues through the

Hieroglyphic Mountains which are relatively tall (2,200 feet) and rugged at this point for 2.4 miles. Between the mountains are washes with sandy bottoms. The vegetation includes saguaros, shrubs, and trees. The trees are mainly along the small washes, and there are more trees on the north-facing slopes. The route crosses or borders the future developments of Saddleback Heights and Vistancia. It crosses three existing two-track dirt roads. The route continues east where the lower rolling terrain widens between the hills and mountains for 2.9 miles. The route crosses a few washes with sandy bottoms and trees along the washes. The trees are evenly distributed on the north and south sides of the hills. The route crosses portions and borders portions of the future developments of Saddleback Heights, Vistancia, and Lake Pleasant Heights. It crosses many two-track roads and single track roads and/or trails. The Clementine Mine is about 0.5 mile to the south, the Twin Buttes (local high points) are about 0.7 mile to the south, and the CAP Canal is about 1.4 miles to the south. For the next 2.2 miles, the route continues east and crosses on the south slopes of an unnamed long tall ridge, over a steep-sided wash, and then drops down into the Agua Fria valley. The vegetation in the braided river bottom is composed of shrubs, relatively dense trees, and few if any saguaros. There are bladed, two-track, and single track dirt roads and OHV courses in the floodplain.

The Alternative 3 route turns northeast for 1.5 miles. The route travels out of the valley bottom and crosses the Maricopa Trail with gently rolling terrain. The vegetation consists of shrubs some saguaros, and widely scattered trees. The route parallels existing Western Area Power Administration 500kV, 230kV, and 69kV transmission lines. Canyon Speedway and various vehicle courses are to the east and Cowtown Paintball recreation facility is to the west across the river. The route passes over a surfaced road to the paintball facility and a bladed and many two-track roads. The route passes next to the Raceway Substation and over the Beardsley and Waddell canals. It ends at the Morgan Substation.

BLM Visual Resource Inventory and Management

No BLM-managed public lands are crossed in this portion of the Project; therefore no BLM VRI or VRM classes are assigned.

Sensitive Viewers and Key Observation Points

Sensitive viewers in this portion of the Project Area include travelers on SR 74, residents in the northern portions of the Vistancia development south of the CAP, and landowners of the private property between the CAP and SR 74.

KOP 9

KOP 9 is located along SR 74 where the ROW along the Joy Ranch Road alignment approaches and begins to parallel the south side of SR 74, then turns south along 179th Avenue, looking east. Sensitive viewers from KOP 9 would be east-bound travelers on SR 74.

The landscape form viewed from this KOP (**Figure 4.14-26a**) is slightly undulating in the foreground with rolling hills visible in the distance. The vegetation in the area of the KOP is patchy to dense, with a variety of native shrubs, cactus and a few low trees. While the landscape is open, the road cut with vegetation blocking the middle ground views begins to feel slightly enclosed. Aside from SR 74, no other man-made developments are visible,

making the view feel very natural. The vegetation in the foreground and rolling hills in the background create an undulating, broken horizontal line at the skyline. The roadway with painted lines and the associated road shoulder creates crisp diagonal lines. Several saguaros are visible, creating short vertical lines that contrast with the horizontal line of the skyline. The predominant colors in the landscape are the gray of the road surface, shades of greens, tans, and browns in the vegetation, and thin slivers of dark gray-blue of the hills in the background. The road surface appears smooth with cracks in the foreground to smooth in the distance. Vegetation is clumped, and feathery to stippled.

KOP 12

See the description for KOP 12 under **Section 3.14.5.7**.

KOP 14

KOP 14 is located approximately one mile south of SR 74, immediately west of the BLM-managed public lands south of SR 74, on private property that is undergoing planning in preparation to be included in the Vistancia development, looking south. Sensitive viewers from KOP 14 would be landowners looking at the proposed transmission line crossing undeveloped lands.

The landscape viewed from this KOP (**Figure 4.14-27a**) is open and relatively flat in the foreground, with views of a few pyramidal hills in the middle ground, forming an irregular strong horizontal line. Glimpses of distant views of the horizon can be caught in the saddles between the hills, forming short, faint horizontal lines. Distant rugged mountains create another faint, irregular horizontal line. Vegetation is patchy, with some patches densely vegetated with small trees, shrubs, and a variety of cactus; interspersed with patches that are sparsely vegetated or bare ground. Most of the vegetation appears soft and lumpy. Numerous saguaros create short vertical lines. The predominant colors in the landscape are shades of green, reddish brown, and tan. Vegetation in the foreground is feathery to spiky, and becomes dotted to stippled in the middle ground. No developments are visible in the landscape, and it appears very natural and scenic.

KOP 15

KOP 15 is located in the central portion of the Vistancia development, just south of the CAP, looking north. Sensitive viewers from KOP 15 would be property owners and residents looking at the proposed transmission line crossing undeveloped land within the Vistancia development.

The landscape viewed from this KOP (**Figure 4.14-28a**) is composed of low, gently rolling hills. A glimpse of distant hills is visible in a saddle between the hills. The hills create a strong irregular and somewhat curvilinear horizontal line at the skyline. Development in the foreground has eliminated most vegetation. A few shrubs, trees, and saguaros are visible at the periphery of the view. Vegetation in the middle ground appears patchy and sparse, comprised of low shrubs and trees. The landscape has been highly modified and, as viewed at the time of the photograph, was under development. The predominant colors in the landscape are the gray paved road; browns, tans, grays, and reddish browns and tans of the bare ground under development. Vegetation in the middle ground is gray-green against the reddish-brown

bare ground. The foreground appears smooth to gravely in the area under development, and rocky, stippled, and dotted in the middle ground.

KOPs 19 and 20

See the descriptions for KOPs 19 and 20 under **Section 3.14.5.7**.

3.14.5.10 State Trust Land Route Variation Sub-alternative

Sub-alternative

This portion of the Project begins just north of the intersection of the Proposed Action route and US 60, continues east for three miles along the Cloud Road alignment, turns north for one mile along 211th Avenue, and ends where the route rejoins the Proposed Action route just south of SR 74.

Landscape Characteristics

The Sub-Alternative route diverges from the route common to the Action Alternatives at Cloud Road. The route travels east paralleling the north side of Cloud Road or its alignment for 1.8 miles until reaching the eastern boundary of the Wickenburg Scenic Corridor. The terrain is gently rolling with many small and larger sandy bottom washes. Vegetation includes saguaros, shrubs, and trees. The trees are mainly located along washes. The route crosses nine two-track dirt roads; four of the roads are within 0.5 mile of 211th Avenue. The centerline of the route is within approximately 600 feet of 13 homes, which are located just west of 211th Avenue. The route crosses the boundary of the scenic corridor and continues 0.2 mile. The route then turns north along the west side of 211th Avenue and continues for 1 mile crossing a sandy bottomed wash several times. The route crosses three two-track roads and ends at the route common to all Action Alternatives. Just to the east of 211th Avenue is a communications tower with daytime white obstruction lighting and two residences.

BLM Visual Resource Inventory and Management

No BLM-managed public lands are crossed in this portion of the Project; therefore no BLM VRI or VRM classes are assigned.

Sensitive Viewers and Key Observation Points

Sensitive viewers of the Sub-alternative route would be travelers on 211th Avenue and residents with views of the Sub-alternative route.

KOPs 4 and 7

See the description for KOPs 4 and 7 under **Section 3.14.5.5**. Under the Sub-alternative route, sensitive viewers from KOP 4 would not see the proposed transmission line behind residences in Thunder Ridge Airpark. From KOP 7, sensitive viewers would see the proposed transmission line paralleling 211th on the east under the Sub-alternative route.

KOP 21

KOP 21 is located near the intersection of Caravaccio Lane & 213th Drive, looking northwest. Sensitive viewers from KOP 21 would be residents looking at the proposed transmission line running behind existing residences.

The landscape viewed from this KOP (**Figure 4.14-29a**) is relatively flat with homes, garages, dirt roads, and fences in the foreground, and a few rugged mountains in the distance. The horizontal line at the skyline is broken by buildings, trees, and distant mountains making it indistinct. Fencing in the foreground creates broken but distinct horizontal and vertical lines that repeat the lines in the structures. The residences appear boxy, and the rooflines of the residences in the foreground are made up of short diagonal lines. The foreground is mostly cleared of vegetation except for scattered cactus, low trees, and patches of grass. Vegetation in the middle ground appears to be dense patches of trees and shrubs with an occasional saguaro. The predominant colors in the landscape are light tans and browns in the bare ground and structures. Vegetation is shades of green and gray-green. Distant mountains appear gray-brown. Bare ground in the foreground appears smooth to stippled, dotted with grass or gravel. Vegetation in the middle ground appears feathery, while the distant mountains appear smooth to slightly lumpy.

KOP 22

KOP 22 is located east of 211th Avenue on Carlisle Road, looking west. Sensitive viewers from KOP 22 would be residents looking at the proposed transmission line paralleling 211th.

The landscape viewed from this KOP (**Figure 4.14-30a**) is flat with middle ground views of a few rolling hills and mountains on the periphery of the view. The presence of the structure, roads, and fences give the view a feeling of rural semi-development. A communications tower near the center of the view creates a prominent, tall vertical line. The skyline creates a horizontal line that is fuzzy and indistinct due to intervening vegetation. Carlisle Road and the fences that line it create strong diagonal lines in the foreground, with upright fence posts creating a visual sequence of short vertical lines. One structure is peripherally visible. Vegetation in the area consists of sparse low shrubs with an occasional small tree and saguaro. The predominant colors in the landscape are light tan, dark brown, and shades of green. Vegetation appears soft and feathery, except for the saguaro, which look blunt and rounded. The structures and distant mountains appear smooth.

Primary Segment Common to All Action Alternatives

This portion of the Project begins just north of the intersection of the Proposed Action route and US 60, continues north to the Joy Ranch Road alignment, then turns east for approximately three miles and ends at the intersection with 211th Avenue.

Landscape Characteristics

The portion of the Proposed Action/common route that could be replaced by the Sub-alternative starts in the Wickenburg Scenic Corridor. After crossing US 60 and the Burlington Northern Santa Fe Railroad track, the route crosses Cloud Road and continues north paralleling the Thunder Ridge Airpark, a residential community, approximately 0.2 mile from the route centerline. A bladed dirt road parallels and is within the route for a portion of this segment. The route then turns to the east for 1.7 miles until reaching the eastern end of the Wickenburg Scenic Corridor. The terrain is gently rolling with many small and larger sandy bottom washes. Vegetation includes saguaros, shrubs, and trees. The trees are mainly in the washes but are also scattered between the washes. The route crosses one bladed and five two-track dirt roads. The route continues east for 0.3 mile crossing two two-

track roads and paralleling a two-track segment that is within the 200-foot wide ROW. At 211th Avenue, this segment would join the route common to all Action Alternatives.

BLM Visual Resource Inventory and Management

No BLM-managed public lands are crossed in this portion of the Project; therefore no BLM VRI or VRM classes are assigned.

Sensitive Viewers and Key Observation Points

Sensitive viewers of the primary segment route common to all Action Alternatives would be travelers on 211th Avenue and residents in the vicinity of Thunder Ridge Airpark.

KOPs 5, 6, and 7

See the descriptions for KOPs 5, 6, and 7 under **Section 3.14.5.5**.

3.15 WATER RESOURCES

The information provided in the following subsections is taken primarily from a report titled *Environmental Resource Report for Water Resources Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012k). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review. Information on jurisdictional status of washes located within the proposed corridors was obtained from a Preliminary Jurisdictional Delineation (PJD) (URS 2013a) and URS Impact Assessment Models for Waters of the U.S. (URS 2013b; URS 2013c).

The Study Area for this section was based on a watershed level which includes the lands within and adjacent to the Proposed Action route, the ACC-certificated route, and the other Action Alternative routes. The Project locally traverses from east to west the Lower Agua Fria River, Trilby Wash, and the Lower Hassayampa River watersheds.

This report discusses applicable plans, policies, and regulations for water resources and identifies the existing surface water and groundwater resources that may be potentially affected by the Project.

3.15.1 Surface Water Resources

3.15.1.1 Laws, Ordinances, Regulations, and Standards

Clean Water Act - In 1972, Congress passed the Federal Water Pollution Control Act, which was reauthorized in 1977, 1981, 1987, and 2000 as the CWA (33 USC Section 1251 et seq.). The goals of the law are to eliminate pollution in the nation's waters by imposing uniform standards on all municipal and industrial wastewater sources based on the best available technology and wherever attainable, water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (Section 402 of the CWA; 33 USC §1342).

Section 401 of the Clean Water Act of 1972

Section 401 of the CWA (33 USC §1341) requires that any activity, including river or stream crossings during road, pipeline, or transmission line construction, which may result in discharge into a state waterbody, must be certified by the ADEQ. This certification ensures that the proposed activity does not violate state and/or federal water quality standards. ADEQ uses its Section 401 certification authority to ensure that Section 404 permits protect state water quality standards.

Section 404 of the Clean Water Act of 1972

In 1972, the U.S. Congress gave the U.S. Army Corps of Engineers (USACE) authority to regulate the discharge of dredged or fill material into waters of the U.S. under Section 404 of the CWA (33 USC §1344). The Rivers and Harbors Act of 1899 defined navigable waters of the U.S. as those waters that are subject to the ebb and flow of the tides and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. The CWA built on this definition and defined waters of the U.S. to include tributaries to navigable waters, interstate wetlands, wetlands which could affect interstate or foreign commerce, and wetlands adjacent to other Waters of the U.S.

The USACE may issue either individual, site-specific permits (standard permit, letter of permission) or general permits (regional or nationwide) for discharges of dredged or fill material into waters of the U.S. Transmission line construction is covered under Nationwide Permit No. 12 Utility Line Activities.

APS had an initial meeting with the local USACE office in August 2012 to introduce the Project and discuss methods for completing a Jurisdictional Delineation. Based upon the initial meeting and a review of the Project, the USACE stated that the Project could likely be permitted under a Nationwide Permit No. 12, thus complying with Section 404 of the CWA. In order to determine if the Project would meet the requirements of a Nationwide Permit No. 12, complete delineation efforts were undertaken upon completion of the Draft EIS.

Section 303(d) of the Clean Water Act of 1972

The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (33 USC §1251(a)). Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop lists of impaired waters. The term "303(d) list" is short for the list of impaired and threatened waters (e.g., stream/river segments, lakes) that all states are required to submit for EPA approval during even-numbered years. A state's 303(d) impaired waters list is composed of all waters where the state has identified that required pollution controls are not sufficient to attain or maintain applicable water quality standards. The law requires that states establish a prioritized schedule for waters on the lists, and develop Total Maximum Daily Loads (TMDLs) for the identified waters based on the severity of the pollution and the sensitivity of the uses to be made of the waters, among other factors (40 CFR §130.7(b)(4)).

Arizona's Integrated 305(b) Assessment and 303(d) Listing Report (ADEQ 2009) describes the status of surface water in Arizona in relation to state water quality standards. The report also contains a list of Arizona's impaired surface waters, including a list of surface waters requiring the development of a TMDL (the 303(d) List). The report fulfills requirements of

the federal CWA Sections 305(b) assessment, 303(d) impaired water identification, and 314 status of lake water quality.

Executive Order 11988 – Floodplain Management - Executive Order 11988 requires federal agencies to avoid, to the extent possible, long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains.

The National Flood Insurance Program administered by the Federal Emergency Management Agency (FEMA) identifies flood hazard areas throughout the U.S. by producing Flood Hazard Boundary Maps, Flood Insurance Rate Maps, and Flood Boundary and Floodway Maps. Several areas of flood hazards are commonly identified on these maps. One of these areas is the Special Flood Hazard Area, or high-risk area, defined as any land that would be inundated by a flood having a 1 percent chance of occurring in any given year (also referred to as a base flood or 100-year flood). These maps will be used to determine where the Project crosses flood hazard areas, so that potential safety hazards can be recognized and floodplains preserved or restored.

Executive Order 11990 – Protection of Wetlands - Executive Order 11990, issued on May 24, 1977, requires federal agencies to take action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. To meet these objectives, the Order requires federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The Order applies to the acquisition, management, and disposition of federal lands and facilities construction and improvement projects which are undertaken, financed or assisted by federal agencies and federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities. This Order does not apply to the issuance of permits, licenses, or allocations by federal agencies to private parties for activities involving wetlands on non-federal property.

Stormwater National Pollutant Discharge Elimination System - Sections 301 and 402 of the CWA prohibit the discharge of pollutants from point sources to Waters of the U.S., unless authorized under a NPDES permit. NPDES regulates stormwater discharge from a large group of industrial activities, including construction. NPDES permits can be issued by EPA or by agencies in delegated states. As of December 5, 2002, ADEQ administers the NPDES Program in the State of Arizona under the AZPDES. Where discharges have a potential to enter waters of the U.S. or a storm drain system, an AZPDES permit is required from ADEQ. The Project would require an AZPDES Construction General Permit for construction operations.

Maricopa County, Arizona - Maricopa County Floodplain Regulations require a Floodplain Use Permit for any construction in regulated and pending floodplains. The Flood Control District of Maricopa County (FCDMC) issues Floodplain Use Permits through a cooperative agreement with FEMA. The FEMA requirement includes federal lands and therefore,

development on BLM land is not exempt from this process. The Project would require a Floodplain Use Permit from FCDMC.

Maricopa County Department of Planning and Development does not have jurisdiction over federal lands, consequently, the Project would not require a Maricopa County Grading and Drainage Permit or a Drainage Facilities Permit for development on BLM lands. However, the Maricopa County Department of Planning & Development does have jurisdiction over the portion of the ACC-certificated route that crosses State Trust lands, thus a Grading and Drainage and/or Drainage Facilities Permits would be required for applicable portions.

3.15.1.2 Climate

The climate of the Study Area is arid and characterized by hot summers, mild winters, and large diurnal temperature variations. Mean monthly maximum temperatures measured at Wittmann, Arizona, a city located near the Project along US 60 about 35 miles northwest of Phoenix (**Figure 3.15-1**), for the period from 1923 to 2005 is 63.8°F in January and 105.4°F in July. Mean monthly minimum temperatures at Wittmann, Arizona for the same period is 36.2°F in January and 76.5°F in July (Western Regional Climate Center 2011b).

Mean annual precipitation is 9.09 inches at Wittmann, Arizona and 7.52 inches at Phoenix Sky Harbor International Airport for the period from 1948 to 2005 (Western Regional Climate Center 2011b). Precipitation varies greatly from year to year, and wet years may have as much as four times the precipitation of dry years (Cordy et al. 1998). The climate is characterized by two rainy periods. Convective storms occur during July and August and are sometimes intense. Frontal storms of lesser intensity occur from December through mid-March (Sellers and Hill 1974). Evaporation rates are high, and free-water surface evaporation exceeds 5 feet per year (Farnsworth et al. 1982).

3.15.1.3 Surface Water Conditions

Regionally, the Study Area is located in the Lower Gila-Agua Fria surface water basin that is drained by the Gila River and its tributaries, the Salt and Agua Fria Rivers (**Figure 3.15-1**). The Lower Gila-Agua Fria basin is subdivided into the Agua Fria and Hassayampa regional watersheds. Within these regional watersheds, the Proposed Action route and other Action Alternative routes traverse from east to west the Lower Agua Fria River, Trilby Wash, and the Lower Hassayampa River watersheds. These watersheds are bordered by desert mountain ranges that include the Vulture and Hieroglyphic Mountains on the north; the Phoenix Mountains and Camelback Mountain on the east; and the Belmont and White Tank Mountains to the south. Gently sloping alluvial plains generally extend, at a grade of approximately one percent, from the base of the mountains southeast to the Agua Fria River and southwest to the Hassayampa River. Along the Proposed Action route and other Action Alternative routes, the altitude of the land surface ranges from about 2,000 feet amsl in the Hieroglyphic Mountains to approximately 1,400 feet amsl along the Agua Fria and Hassayampa Rivers to the east and west, respectively.

Most of the Study Area is characterized by desert scrub vegetation and desert washes. The desert washes are braided in plain view and generally flow to the southeast to the Agua Fria River or southwest to the Hassayampa River. These washes are ephemeral and therefore only flow during, or immediately after, a significant seasonal rainfall. They naturally distribute water and sediment across the region. The washes are unstable and can migrate laterally

during significant runoff. They also carry destructive bedloads (boulders and gravels) during intense flash flooding rain events.

Most of these washes are small erosion features that are less than 10 feet wide and 3 feet deep. Natural ephemeral washes can perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream. Many of the latter type of functions depend upon the presence of a riparian corridor, which is lacking in most of the Study Area streams. Instead, most of the area washes likely perform more limited hydrological functions such as providing adequate capacity for flood control, energy dissipation, and sediment movement.

With the exception of the Agua Fria and Hassayampa Rivers, there are no perennial or intermittent watercourses in the Study Area. Flows in the Agua Fria River are almost entirely regulated. In years of normal precipitation, all flow is captured and stored behind a dam in the Lake Pleasant reservoir (e.g., Lake Pleasant) that is upstream from the Study Area. Downstream from the dam and reservoir, only occasional flow in local tributaries reaches downstream rivers except at times of high flows during extremely wet years.

Water from the reservoirs is distributed through a system of canals. Originally, the canals were designed to provide only surface water for irrigated agriculture, but as the area developed, groundwater augmented the supply. As the region has undergone a transition from agricultural to urban land use, the canals have become integrated into urban water-supply systems. The Beardsley Canal, operated by the Maricopa Water District, transports water from Agua Fria River to the west-central part of the Study Area.

The water supply from rivers within the basin is augmented by the CAP which brings water from the Colorado River to central and southern Arizona. The cities of Phoenix and Glendale treat CAP water and distribute it through their municipal systems. CAP water also can be delivered to the area through Salt River Project canals and the Beardsley Canal. CAP water is stored in Lake Pleasant with water from the Agua Fria River. Generally, water is banked in Lake Pleasant during low demand periods such as the winter and released during high demand periods such as the summer.

Lower Agua Fria River Watershed

The Lower Agua Fria River, also known as the Agua Fria River below Lake Pleasant, watershed lies south of Lake Pleasant and covers 439 square miles (**Figure 3.15-1**). The Agua Fria River is the most prominent surface water feature in the watershed. It flows into the watershed from the New Waddell Dam that forms Lake Pleasant to the north and flows south out of the watershed to its confluence with the Gila River. The primary purpose of Lake Pleasant is to store Colorado River water for CAP use.

The eastern end of the Project begins in the floodplain along the Agua Fria River and traverses the Hieroglyphic Mountains through the western portion of the Lower Agua Fria watershed until it enters the Trilby Wash watershed to the west. Topographic elevations along the Proposed Action route and other Action Alternative routes within the watershed range from approximately 1,400 feet amsl along the Agua Fria River, to 2,000 feet amsl in the Hieroglyphic Mountains, and to 1,900 feet amsl where the route enters the Trilby Wash watershed. The routes traverse numerous southeast-trending ephemeral washes.

With the exception of the Agua Fria River, all washes in the watershed are ephemeral and only flow during and immediately following large precipitation events. There are numerous washes in the watershed. Most of the washes are small, 10 feet wide or less, but larger washes more than 10 feet wide also exist. The washes in this watershed tend to be shallow with depths ranging from three feet or less. A few of the larger washes have depths of 3 feet or more. The washes collect runoff from the surrounding areas and convey it southeast to the Agua Fria River. Most of the runoff is lost to evaporation before it reaches the river, except during large precipitation events when seepage to the subsurface may occur through the permeable alluvial sediments.

A review of the current FEMA Flood Insurance Rate Maps indicates that the Project crosses FEMA-regulated or pending floodplains in the Lower Agua Fria River watershed (**Figure 3.15-1**).

Trilby Wash Watershed

The Trilby Wash, also known as the Trilby Wash-Trilby Wash Basin, watershed lies west of the Lower Agua Fria River watershed and covers 242 square miles (**Figure 3.15-1**). The Picacho, Trilby, and Iona Washes are the most prominent surface water features in the watershed and traverse the Proposed Action route. These washes and their tributaries convey runoff to the southeast where it discharges to the Trilby Wash Basin, a flood control structure managed by the Maricopa County Flood Control District. The McMicken Dam, a 10-mile long, 34-foot high earthen dam, is constructed at the eastern end of the Trilby Wash Basin. Discharge from the Trilby Wash Basin to the Agua Fria River occurs through the McMicken Dam Outlet Channel and McMicken Dam Outlet Wash.

The Project enters the Trilby Wash watershed from the Lower Agua Fria River watershed to the east, traverses the relatively flat alluvial basin comprising the watershed until it enters the Lower Hassayampa River watershed to the west. Numerous southeast-trending ephemeral washes cross the Project within the watershed. Topographic elevations along the Project within the Trilby Wash watershed range from approximately 1,900 feet amsl along the eastern boundary of the watershed to 1,760 feet amsl where the route enters the Lower Hassayampa River watershed.

All washes in the watershed are ephemeral and only flow during and immediately following large precipitation events. There are numerous washes in the watershed. Most of the washes are small, 10 feet wide or less, but larger washes more than 10 feet wide exist. The washes in this watershed tend to be shallow with depths ranging from three feet or less. A few of the larger washes have depths of three feet or more. The washes collect sheet flow from the surrounding areas and convey it southeast to the Trilby Wash Basin and the Agua Fria River. Most of the runoff is lost to evaporation before it reaches the Trilby Wash Basin, except during large precipitation events when seepage to the subsurface may occur through the permeable alluvial sediments. Seepage losses to the subsurface likely occur beneath the Trilby Wash Basin when standing water is present.

A review of the current FEMA Flood Insurance Rate Maps indicates that the Project crosses FEMA-regulated or pending floodplains in the Trilby Wash watershed (**Figure 3.15-1**).

Lower Hassayampa River Watershed

The Lower Hassayampa River watershed lies west of the Trilby Wash watershed and covers 333 square miles (**Figure 3.15-1**). The Hassayampa River and Wagner Wash are the most prominent surface water features in the watershed along the Proposed Action route. The river flows south through the watershed to its confluence with the Gila River upstream of the Gillespie Dam. Wagner Wash flows south along the east side of the Project, and then turns southwest at the CAP to its confluence with the Hassayampa River.

The Project enters the Lower Hassayampa River watershed from the Trilby Wash watershed to the east and traverses north to south along the eastern side of the Hassayampa River to its terminus near a re-lift pumping station along the Hayden-Rhodes Aqueduct of the CAP. The Project would cross several ephemeral washes that are tributaries to the Hassayampa River. Topographic elevations along the route within the Lower Hassayampa River watershed range from approximately 1,760 feet amsl along the eastern boundary of the watershed to 1,520 feet amsl at its terminus along the CAP.

With the exception of the Hassayampa River, all washes in the watershed are ephemeral and only flow during and immediately following large precipitation events. There are numerous washes in the watershed. Most of the washes are small, 10 feet wide or less, but larger washes more than 10 feet wide also exist. The washes in this watershed tend to be shallow with depths ranging from three feet or less. A few of the larger washes have depths of three feet or more. The washes collect sheet flow from the surrounding areas and convey it southwest to the Hassayampa River or southeast to Wagner Wash. Most of the runoff is lost to evaporation before it reaches the river, except during large precipitation events when seepage to the subsurface may occur through the permeable alluvial sediments.

A review of the current FEMA Flood Insurance Rate Maps indicates that the Project would cross FEMA-regulated or pending floodplains in the Lower Hassayampa River watershed (**Figure 3.15-1**).

Wetlands

Under section 404 of the CWA, wetlands are defined as "areas that are inundated or saturated by surface or groundwater at a frequency sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Three parameters are used to delineate wetlands: hydrophytic vegetation (more than 50 percent of dominant plants are adapted to anaerobic soil conditions), hydric soils (soils classified as hydric or that exhibit characteristics of a reducing environment), and wetland hydrology (inundation or soil saturation during at least five percent of the growing season).

For the purposes of this Final EIS, the amount of wetlands present in the Study Area has been identified using data from the National Wetland Inventory database. A review of National Wetland Inventory data indicates that wetlands are not present with the Study Area.

Waters of the U.S.

Waters of the U.S. refers to areas under USACE jurisdiction pursuant to section 404 of the CWA; they are generally defined by the ordinary high water mark. USACE jurisdiction can

extend beyond the ordinary high water mark, to the limit of adjacent aquatic features, when adjacent aquatic features are present.

For the purposes of this Final EIS, Waters of the U.S. were identified through a PJD (URS 2013a), which included a review of aerial photography as well as some ground-truthing and field data collection. The PJD has been submitted to the USACE for review and concurrence. **Table 3.15-1** summarizes Waters of the U.S. within the 200-foot wide power line corridor. Of the washes identified in the table, some may not be crossed or directly impacted by fill. These identified Waters of the U.S. consist of non-wetland ephemeral washes. The largest ephemeral wash crossing in the Project is the Agua Fria River, located approximately 1 mile northwest of the Morgan Substation. The Hassayampa River is located in the vicinity of the Sun Valley Substation, but is not crossed by the Project. One CAP canal crossing occurs within the Study Area approximately 0.5 mile north of the Sun Valley Substation.

The Gila River from Powers Butte to the Gillespie Dam is the closest Traditional Navigable Water (TNW) to the Study Area. At the closest point, the Study Area near the Sun Valley Substation is approximately 25 miles north of the Gila River TNW. Waters of the U.S. within the Study Area have connectivity to the Gila River TNW through surface flows.

Table 3.15-1 Waters of the U.S. within the Study Area

ALTERNATIVE	NUMBER OF WATERS OF THE U.S. WASHES*
Proposed Action and Alternative 1	191
Alternative 2	189
Alternative 3	188
Sub-alternative	26
Primary Segment	22

Source: URS 2013c.
*These numbers do not include access road crossings for roads outside of the corridors.

APS coordinated with the USACE prior to submittal of the PJD so that delineation methods and assumptions would be agreed upon ahead of time, thus facilitating agency concurrence. Upon approval by the USACE, a determination of which permit(s) would be required would be known and such permits would be obtained.

3.15.1.4 Surface Water Flow and Runoff

Surface water runoff in the Study Area ranges from 0.1 to 0.5 inches per year or 5.3 to 26.7 acre-feet per square mile. These values are based on the USGS annual runoff contours developed for Maricopa County for 1951 through 1980 (Gebert et al. 1987). Several streamflow gages are operated cooperatively between the FCDMC and the USGS by the FCDMC's Automated Local Evaluation in Real Time (ALERT) System for the purposes of flood event monitoring. Stream flow measurements made by the FCDMC at selected stations in the Study Area indicates that surface water flows range from zero to as high as 787 cubic feet per second (cfs; FCDMC 2010). Most of the extreme flows occurred during

February 2003. The extreme flow at Upper Trilby Wash, an ephemeral wash that crosses the Project route, was 129 cfs in February 2003. The peak flow in water year 2010 at Upper Trilby Wash was 28 cfs.

Floodplains

FEMA identifies and maps the floodplains of the U.S. through the National Flood Insurance Program. These maps are available to communities to help them reduce future flood damage. FEMA has designated a 100-year floodplain, areas of minimal flooding, and areas of undetermined flooding along the Project route (**Figure 3.15-1**). FEMA considers areas of minimal flood hazard as being outside of the 500-year flood level (FEMA 2011a and 2011b). Areas with undetermined flooding could have flood hazards, but no flood hazard analysis has been conducted.

3.15.1.5 Surface Water Quality

No surface water quality information is available as surface water only occurs in most of the washes during and immediately after rain events. However, the nature of the site soils, rain events, and local flooding that occurs suggests that the resulting surface waters would be high in turbidity because of suspended particulates and would contain naturally occurring constituents that are leached from the soils, including minerals and salts. As this is largely an undeveloped area, anthropogenic constituents would be expected to be low or non-existent.

Every two years, the ADEQ is required by the federal CWA to conduct a comprehensive analysis of water quality data associated with Arizona's surface waters to determine whether state water quality standards are being met and designated uses are being supported. The most recent report is the 2006/2008 Assessment Report (ADEQ 2009). The integrated surface water assessment and impaired waters listing report serves to fulfill the national reporting requirement of the CWA. It is submitted to the EPA and used to report on national water quality issues and concerns. Review of the 2006/2008 Assessment Report and an interactive map showing impaired waters (ADEQ 2011) indicates that there are no impaired waters along the Proposed Action route or other Action Alternative routes. Lake Pleasant is the nearest impaired water body to the Project.

3.15.1.6 Surface Water Use

Water to support irrigated agriculture and a growing urban population in the region has been obtained by building reservoirs on the Salt, Verde, and Agua Fria Rivers and by pumping groundwater from the alluvial sediments in the basin. The water used does not depend on local precipitation, but comes from snowmelt in the mountains of eastern and central Arizona and from groundwater recharged to the aquifer in prehistoric times. Since 1985, additional water has been imported from the Colorado River and either used directly or stored in the basin-fill aquifer. The hydrologic system is managed carefully, and the use of surface water and groundwater is strictly regulated. With the exception of the Agua Fria and Hassayampa Rivers, perennial or intermittent surface water is not present and, therefore, is not used within the Study Area. Surface water points of diversion and places of use (POU) are shown on **Figure 3.15-1**. The majority of the points of diversion and POUs supply water to livestock, wildlife, and irrigation. **Table 3.15-2** summarizes the surface water uses and water rights information for points of diversion and POUs within a one-mile radius of the Proposed

Action and Action Alternative routes. All of these listed water rights have a status designated as active.

3.15.2 Groundwater Resources

3.15.2.1 Laws, Ordinances, Regulations, and Standards

Groundwater resources in Arizona are regulated under the Arizona Groundwater Code (ARS Title 45, Chapter 2) administered by the Arizona Department of Water Resources (ADWR). Under the Groundwater Code, groundwater development is restricted and intensively managed within five Aquifer Management Areas (AMAs), one of which is Phoenix AMA, in which the Project is situated. However, if groundwater is used for the Project, it will be leased or purchased from a well that is already constructed and permitted, thus there would be no need for a groundwater right or a groundwater withdrawal permit to pump groundwater. Nor would compliance with ADWR well spacing and well impact analysis be required.

Grandfathered Groundwater Rights

A well owner must have either a grandfathered right or a groundwater withdrawal permit to legally pump groundwater within an AMA at a rate in excess of 35 gallons per minute (gpm). Grandfathered rights are authorized under ARS Title 45, Chapter 2, Article 5, and are classified as Irrigation, Type 1 Non-Irrigation, and Type 2 Non-Irrigation grandfathered rights. Irrigation and Type 1 non-irrigation rights must be used on the land where the groundwater is pumped. A Type 2 non-irrigation grandfathered right can be used anywhere within an AMA and can be purchased or leased. Given that there is no irrigated land along the Proposed Action or other Action Alternative routes, a Type 2 grandfathered right is the only type of grandfathered water right potentially available for Project use.

Groundwater Withdrawal Permits

Prior to drilling a new well, or deepening or modifying an existing well, a person must file a Notice of Intent to Drill with the ADWR for all wells outside an AMA and non-exempt wells within an AMA and an Application for Drilling Permit for non-exempt wells within an AMA. Groundwater withdrawal permits are authorized under A.R.S. Title 45, Chapter 2, Article 7. As noted, there are no well drilling activities proposed for this Project.

Table 3.15-2 Surface Water Points of Diversions and POUs within a 1-Mile Radius of the Proposed Action and Action Alternative Routes

(Footnotes at the end of table.)

OWNER	PERMIT NO.	PT OF DIV OR POU	SURFACE WATER USE	SOURCE	WATERSHED	SUB-BASIN	FILE DATE	PRIORITY DATE
Chrysler Corp	33-91559	Pt of Div	Industrial, Livestock, Wildlife	Unnamed Wash	Agua Fria River	West Salt River Valley	11/19/1986	11/19/1986
Chrysler Corp	33-91559	POU	Industrial, Livestock, Wildlife	Unnamed Wash	Agua Fria River	West Salt River Valley	11/19/1986	11/19/1986
USBR	33-96335	Pt of Div	Wildlife	Morgan City Wash	Agua Fria River	Lake Pleasant	12/27/1993	12/27/1993
USBR	33-96335	POU	Wildlife	Morgan City Wash	Agua Fria River	Lake Pleasant	12/27/1993	12/27/1993
BLM	36-20866	Pt of Div	Not Given	Not Identified	Agua Fria River	Lake Pleasant	6/26/1979	4/17/1926
ASLD	36-2739	Pt of Div	Stockwater and Wildlife	East Draw	Agua Fria River	Lake Pleasant	1/16/1987	12/31/1883
ASLD	36-2739	POU	Stockwater and Wildlife	East Draw	Agua Fria River	Lake Pleasant	1/16/1987	12/31/1883
ASLD	36-2740	Pt of Div	Stockwater and Wildlife	Agua Fria River	Agua Fria River	Lake Pleasant	1/16/1987	12/31/1883
ASLD	36-2740	Pt of Div	Stockwater and Wildlife	Agua Fria River	Agua Fria River	Lake Pleasant	1/16/1987	12/31/1883
ASLD	36-2740	POU	Stockwater and Wildlife	Agua Fria River	Agua Fria River	Lake Pleasant	1/16/1987	12/31/1883
ASLD	36-2740	POU	Stockwater and Wildlife	Agua Fria River	Agua Fria River	Lake Pleasant	1/16/1987	12/31/1883
ASLD	36-2767	Pt of Div	Stockwater and Wildlife	Agua Fria River	Agua Fria River	Lake Pleasant	1/16/1987	12/31/1883

Table 3.15-2 Surface Water Points of Diversions and POUs within a 1-Mile Radius of the Proposed Action and Action Alternative Routes (Continued)

(Footnotes at the end of table.)

OWNER	PERMIT NO.	PT OF DIV OR POU	SURFACE WATER USE	SOURCE	WATERSHED	SUB-BASIN	FILE DATE	PRIORITY DATE
ASLD	36-2767	POU	Stockwater and Wildlife	Agua Fria River	Agua Fria River	Lake Pleasant	1/16/1987	12/31/1883
ASLD	36-2768	Pt of Div	Stockwater and Wildlife	Power line Wash	Agua Fria River	Lake Pleasant	1/16/1987	12/31/1883
ASLD	36-2768	POU	Stockwater and Wildlife	Power line Wash	Agua Fria River	Lake Pleasant	1/16/1987	12/31/1883
ASLD	36-2817	Pt of Div	Stockwater and Wildlife	Green Wash	Lower Gila River	Hassayampa	1/15/1987	12/31/1883
ASLD	36-2817	POU	Stockwater and Wildlife	Green Wash	Lower Gila River	Hassayampa	1/15/1987	12/31/1883
ASLD	36-2829	Pt of Div	Stockwater and Wildlife	Section 2 Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2829	POU	Stockwater and Wildlife	Section 2 Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2831	Pt of Div	Stockwater and Wildlife	ME Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2831	POU	Stockwater and Wildlife	ME Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2832	Pt of Div	Stockwater and Wildlife	Trilby Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2832	Pt of Div	Stockwater and Wildlife	Trilby Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2832	Pt of Div	Stockwater and Wildlife	Trilby Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2832	Pt of Div	Stockwater and Wildlife	Trilby Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883

Table 3.15-2 Surface Water Points of Diversions and POUs within a 1-Mile Radius of the Proposed Action and Action Alternative Routes (Continued)

(Footnotes at the end of table.)

OWNER	PERMIT NO.	PT OF DIV OR POU	SURFACE WATER USE	SOURCE	WATERSHED	SUB-BASIN	FILE DATE	PRIORITY DATE
ASLD	36-2833	Pt of Div	Stockwater and Wildlife	Wild Dog Tank	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2833	POU	Stockwater and Wildlife	Wild Dog Tank	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2847	Pt of Div	Stockwater and Wildlife	Bailey Draw	Agua Fria River	Lake Pleasant	1/15/1987	12/31/1883
ASLD	36-2847	POU	Stockwater and Wildlife	Bailey Draw	Agua Fria River	Lake Pleasant	1/15/1987	12/31/1883
ASLD	36-2848	Pt of Div	Stockwater and Wildlife	ME Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2848	Pt of Div	Stockwater and Wildlife	ME Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2848	POU	Stockwater and Wildlife	ME Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2848	POU	Stockwater and Wildlife	ME Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2855	Pt of Div	Stockwater and Wildlife	Lost Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2855	POU	Stockwater and Wildlife	Lost Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2856	Pt of Div	Stockwater and Wildlife	Tim's Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2856	POU	Stockwater and Wildlife	Tim's Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2857	Pt of Div	Stockwater and Wildlife	Bucky's Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883

Table 3.15-2 Surface Water Points of Diversions and POUs within a 1-Mile Radius of the Proposed Action and Action Alternative Routes (Continued)

(Footnotes at the end of table.)

OWNER	PERMIT NO.	PT OF DIV OR POU	SURFACE WATER USE	SOURCE	WATERSHED	SUB-BASIN	FILE DATE	PRIORITY DATE
ASLD	36-2857	POU	Stockwater and Wildlife	Bucky's Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2859	Pt of Div	Stockwater and Wildlife	Koa Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2859	POU	Stockwater and Wildlife	Koa Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	38-2860	Pt of Div	Stockwater and Wildlife	East Circle City Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2860	POU	Stockwater and Wildlife	East Circle City Wash	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2861	Pt of Div	Stockwater and Wildlife	Trap Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
ASLD	36-2861	POU	Stockwater and Wildlife	Trap Draw	Agua Fria River	West Salt River Valley	1/15/1987	12/31/1883
MCMWCD1	36-66399	Pt of Div	Multiple Uses	Agua Fria River	Agua Fria River	Lake Pleasant	6/7/1978	10/31/1888
BLM	38-17322	Pt of Div	Stockpond	Unnamed Wash	Agua Fria River	West Salt River Valley	6/20/1979	2/16/1977
BLM	38-17322	POU	Stockpond	Unnamed Wash	Agua Fria River	West Salt River Valley	6/20/1979	2/16/1977
BLM	38-17372	Pt of Div	Stockpond	Unnamed Wash	Agua Fria River	Hassayampa	6/20/1979	12/31/1970
BLM	39-17372	POU	Stockpond	Unnamed Wash	Agua Fria River	Hassayampa	6/20/1979	12/31/1970
BLM	38-17904	Pt of Div	Stockpond	Unnamed Wash	Agua Fria River	Hassayampa	6/21/1979	6/5/1939
BLM	38-17904	POU	Stockpond	Unnamed Wash	Agua Fria River	Hassayampa	6/21/1979	6/5/1939
BLM	38-19352	Pt of Div	Stockpond	Unnamed Wash	Agua Fria River	West Salt River Valley	6/25/1979	12/31/1970

Table 3.15-2 Surface Water Points of Diversions and POUs within a 1-Mile Radius of the Proposed Action and Action Alternative Routes (Continued)

(Footnotes at the end of table.)

OWNER	PERMIT NO.	PT OF DIV OR POU	SURFACE WATER USE	SOURCE	WATERSHED	SUB-BASIN	FILE DATE	PRIORITY DATE
BLM	38-19352	POU	Stockpond	Unnamed Wash	Agua Fria River	West Salt River Valley	6/25/1979	12/31/1970
BLM	38-19353	Pt of Div	Stockpond	Unnamed Wash	Agua Fria River	Lake Pleasant	6/25/1979	12/31/1970
BLM	38-19353	POU	Stockpond	Unnamed Wash	Agua Fria River	Lake Pleasant	6/25/1979	12/31/1970
Beardsley Land	3R-141	Pt of Div	Irrigation	Agua Fria River	Agua Fria River	Lake Pleasant	1/12/1924	1/12/1924
Beardsley Land	3R-141	Pt of Div	Irrigation	Agua Fria River	Agua Fria River	Lake Pleasant	1/12/1924	1/12/1924
Jackson	3R-190	Pt of Div	Stockwater	Agua Fria River	Agua Fria River	Lake Pleasant	1/12/1924	1/12/1924
Jackson	3R-190	Pt of Div	Stockwater	Agua Fria River	Agua Fria River	Lake Pleasant	1/12/1924	1/12/1924
Beardsley Land	4A-568	Pt of Div	Irrigation	Agua Fria River	Agua Fria River	Lake Pleasant	6/9/1925	6/9/1925
Beardsley Land	4A-568	Pt of Div	Irrigation	Agua Fria River	Agua Fria River	Lake Pleasant	6/9/1925	6/9/1925
MCMWCD1	4A-575	Pt of Div	Irrigation	Agua Fria River	Agua Fria River	Lake Pleasant	1/12/1924	1/12/1924
MCMWCD1	4A575	Pt of Div	Irrigation	Agua Fria River	Agua Fria River	Lake Pleasant	1/12/1924	1/12/1924

Notes:
MCMWCD1 Maricopa County Municipal Water Conservation District #1
Pt of Div Point of Diversion
POU Place of Use

3.15.2.2 Groundwater Conditions

Hydrogeologic Setting

The Project is located in the Basin and Range Lowlands Province, a physiographic region characterized by generally isolated, north- to northwest-trending, fault-bounded mountain ranges and broad, flat, intervening alluvial valleys and basins that are filled with sediments eroded from the adjacent mountains and form regional aquifers (Montgomery and Harshbarger 1989). The surrounding mountain ranges are composed of a complex suite of igneous, metamorphic, and sedimentary rocks.

The Project is located in the Salt River Valley regional groundwater basin which is designated as the Phoenix AMA. The Salt River Valley groundwater basin is one of a series of structural basins along a northwest-southeast trend characterized by exposed lower-plate crystalline rocks (Spencer and Reynolds 1989) and deep basins containing 8,000 to 12,000 feet of basin-fill sediments (Anderson et al. 1992).

The Project would traverse three local groundwater basins within the aforementioned regional basin. They are designated by the ADWR, from east to west, as the Lake Pleasant, West Salt River Valley, and Hassayampa (**Figure 3.15-2**). Most of the Project is located within the West Salt River Valley groundwater basin.

The West Salt River Valley groundwater basin is divided into northeastern and southwestern parts by a major linear subsurface structure that generally trends parallel to US 60 (Brown and Pool 1989). The thickness of basin fill in the northeastern part of the West Salt River Valley basin is generally less than 2,000 feet. The thickness of basin fill in the southwestern part of the West Salt River Valley basin may exceed 10,000 feet.

The basin fill is composed of alluvial sediments eroded from the surrounding mountains that were deposited in the structural basin since the mid-Tertiary disturbance particularly during and after the Basin and Range faulting (Brown and Pool 1989). The basin fill consists of beds of clay, silt, sand, and gravel typical of a continental environment. Beds usually are lenticular and cannot be traced laterally for long distances either in outcrops or in the subsurface. Sediments tend to be coarse grained near the mountain fronts and fine grained toward the center of the basin. The basin-fill sediments also tend to be coarse grained at the base of the unit where it overlies the crystalline bedrock. Evaporites including anhydrite, gypsum, and especially halite were found in the lower part of the basin fill (Brown and Pool 1989).

The basin fill has been subdivided into three hydrogeologic units called the Upper Alluvial Unit, the Middle Alluvial Unit, and the Lower Alluvial Unit (Corkhill et al. 1993; Dubas and Davis 2006; Freihoefer et al. 2009; Dubas 2010). The units are described below from the top of bedrock up to the land surface.

The Lower Alluvial Unit overlies or is in fault contact with the underlying Hydrologic Bedrock Unit (Corkhill et al. 1993) and ranges from several hundred to several thousand feet in thickness. The Lower Alluvial Unit consists mainly of conglomerate and gravel near the basin margins, grading into mudstone, gypsiferous and anhydritic mudstone and anhydrite in the central areas of the basin. Alternating layers of decomposed volcanics and alluvial fill material comprise the Lower Alluvial Unit in places.

The Middle Alluvial Unit overlies the Lower Alluvial Unit and comprises the uppermost 400 to 500 feet of basin fill. The Middle Alluvial Unit consists mainly of clay, silt, mudstone, and gypsiferous mudstone with some interbedded sand and gravel. Near the margins of the alluvial basins the Middle Alluvial Unit consists mainly of sand and gravel and is difficult or impossible to distinguish from the other units.

The Upper Alluvial Unit overlies the Middle Alluvial Unit and consists of stream alluvium deposited along the present-day Agua Fria, Salt, and the Gila Rivers. The Upper Alluvial Unit was deposited after the filling of the basins with sediment and consists of floodplain and channel-fill deposits. The stream alluvium ranges from clay and silt in the floodplain deposits to sand and gravel in the channel-fill deposits. The thickness of stream alluvium ranges from near zero where the Salt River flows over bedrock to as much as 400 feet near the confluence of the Salt and Gila Rivers (Brown and Pool 1989).

Groundwater Occurrence

Basin fill sediments and stream alluvium comprise the basin fill aquifer and form the most productive and important aquifer beneath the Proposed Action route and other Action Alternative routes. These sediments have a wide range of hydraulic conductivity, store very large volumes of groundwater, and yield small to large amounts of groundwater to wells. Although the basin fill aquifer may be more than 11,000 feet thick, most groundwater is pumped from the top 1,000 feet (Anderson et al. 1992). Groundwater occurs under unconfined and semiconfined conditions in this aquifer.

Groundwater Recharge and Discharge

Natural groundwater discharge occurs primarily to the Gila River along the southern edge of the Salt River Valley groundwater basin and through transpiration by the phreatophytes growing on the flood plains. Groundwater also leaves the West Salt River Valley basin by underflow to the southwest through the basin fill aquifer between the Buckeye Hills and the White Tank Mountains. The predominant groundwater discharge along the Project route occurs to the Agua Fria River and Hassayampa Rivers. Groundwater pumping is the primary source of groundwater discharge in the region, but is relatively insignificant along the Project route.

Groundwater recharge along the Proposed Action route and other Action Alternative routes occurs as mountain front recharge along the edge of the basin at the base of the Hieroglyphic Mountains, as stream channel recharge along the Agua Fria and Hassayampa Rivers, and possibly the Trilby Wash Basin. Groundwater also enters the basin by underflow through the basin fill aquifer from the Upper Hassayampa basin to the northwest. Little, if any, recharge results from precipitation falling directly on the valley floor (Anderson et al. 1992) because more than 95 percent of the precipitation that falls over the basin is lost to evaporation and transpiration before reaching stream channels (Arizona Interstate Stream Commission 1967). Evaporation within the basin ranges from 60 to 72 inches per year (Arizona Water Commission 1975).

Groundwater Depths, Elevations, and Flow Directions

The Groundwater Site Inventory (GWSI) database maintained by the ADWR contains records for thousands of wells in Arizona that have been physically located and inventoried

in the field. A review of groundwater level data in the GWSI database (ADWR 2011) indicates that the depth to groundwater in permitted wells along the Proposed Action route and other Action Alternative routes ranges from less than 150 feet below ground surface in the Hieroglyphic Mountains to approximately 660 feet below ground surface in the West Salt River Valley basin (**Figure 3.15-2**).

The regional groundwater surface generally slopes to the southeast and southwest, indicating that groundwater flows in these directions. The direction of ground-water flow in the region has changed in response to large-scale ground-water pumping. Major cones of depression have developed where groundwater levels have declined more than 300 feet between LAFB and the White Tank Mountains. Groundwater flow near these areas has been redirected toward these cones of depression (Anderson 1986). Groundwater elevations are shown on **Figure 3.15-2**.

Groundwater Level Trends

In response to the continuing decline of groundwater levels, the Groundwater Management Code was passed by the Arizona Legislature in 1980 to eliminate severe ground-water overdraft and to provide a means for allocating Arizona's limited ground-water resources. As a result of the Groundwater Management Code, the ADWR and the Phoenix AMA were established. A principal goal of the Phoenix AMA is to reduce ground-water pumping by 2025 to a quantity that is equal to or less than the quantity being recharged.

ADWR maintains a statewide network of water level index wells for monitoring groundwater conditions. Static water levels are measured annually in the index wells and are stored in the GWSI database (ADWR 2011). A review of the GWSI database indicates that there are eight index wells located in the Study Area (**Figure 3.15-2**). Groundwater levels at most of the index wells show slightly increasing or decreasing trends. The increase or decrease in water level over time at these wells is 15 feet or less.

Groundwater Quality

Two major trends in water use and land use have affected ground-water quality in the Salt River Valley. The first occurred from the 1870s until the 1920s when irrigated agriculture replaced native vegetation. The second is the rapid population increase in metropolitan Phoenix and the accompanying conversion of agricultural and desert land to urban land (Cordy et al. 1998). Groundwater quality along the Proposed Action route and other Action Alternative routes is not well defined due to a lack of reliable water quality data. Groundwater quality does not appear to have been influenced by agricultural irrigation or agricultural recharge as large-scale farms do not appear to exist along the corridor. Most of the groundwater wells along the route appear to be exempt wells associated with residential use. Groundwater quality data available from the few wells in the Study Area indicate that arsenic and fluoride concentrations in groundwater have equaled or exceeded drinking water standards. These constituents are likely naturally occurring as they commonly exceed applicable standards in other parts of the region.

3.15.2.3 Groundwater Use

Review of the ADWR (2011) Wells 55 database, indicates that most of the permitted wells within and adjacent to the Proposed Action route and other Action Alternative routes are

classified as exempt. An exempt well has a maximum permitted pumping capacity of 35 gpm. Most exempt wells are used for residences and are more than adequate for household use. Other uses of exempt wells include non-irrigation purposes, non-commercial irrigation of less than two acres of land, and watering stock. In AMAs, new exempt wells used for non-residential purposes can withdraw a maximum of 10 acre-feet per year. **Figure 3.15-2** shows the municipal water service areas in the Study Area. The municipal water suppliers in the Study Area include Circle City, Chaparral Water Company, City of Peoria, Beardsley Water Company, West End Water Company, and Town of Buckeye. Municipal water is generally supplied from groundwater well fields. **Figure 3.15-2** also shows the non-exempt groundwater wells in the Study Area. Non-exempt wells have a permitted pumping capacity that exceeds 35 gpm. Non-exempt wells include municipal, residential development, industrial, and irrigation water supply wells.

3.16 WILDLIFE RESOURCES, INCLUDING SPECIAL-STATUS WILDLIFE AND MIGRATORY BIRDS

The information provided in the following subsections is taken from a report titled *Environmental Resource Report for Biological Resources Sun Valley to Morgan 500/230kV Transmission Line Project* (URS 2012i). The contents of that report are used essentially verbatim below, and without specific reference. Further, references made in that report are repeated herein without independent review.

3.16.1 Laws, Ordinances, Regulations, and Standards

Bald and Golden Eagle Protection Act (BGA) of 1940 (16 USC §§ 668-668d, 54 Stat. 250, as amended; and PL 95-616 (92 Stat. 3114) - Prohibits anyone, without a permit issued by the Secretary of Interior, from "taking" bald or golden eagles, including their parts, nests, or eggs. The Act defines "take" as to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb."

Endangered Species Act of 1973 - (ESA; PL 85-624; 16 USC §§ 661, 664, 1008): Federal agencies are required to consult with the USFWS to ensure that actions they authorize do not jeopardize the continued existence of any listed species, result in the destruction or modification of critical habitat, or cause a "take" (to harass, harm pursue, hunt, shoot, wound, kill, trap, capture, or collect) of any listed species.

Migratory Bird Treaty Act of 1918 - (16 USC §§ 703-712, as amended): Established a federal prohibition to "pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, …. or any part, nest, or egg of any such bird."

Responsibilities of Federal Agencies to Protect Migratory Birds - (EO 13186): States that each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within two years,

a Memorandum of Understanding (MOU) with the USFWS that shall promote the conservation of migratory bird populations.

American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the ESA - (June 5, 1997; Secretarial Order 3206): Establishes that federal agencies (DOI, NOAA) shall be responsible for 1) working directly with tribes to promote healthy ecosystems, 2) recognizing that Indian lands are not subject to the same controls as federal public lands, 3) assisting tribes in developing programs to promote healthy ecosystems, and 4) being sensitive to Indian culture, religion, and spirituality.

BLM Manual 6840 Special Status Species Management – (Dec. 12, 2008; BLM 2008c) Provides policy and guidance for the conservation of BLM special status species and the ecosystems upon which they depend on BLM-managed lands. BLM special status species are: (1) species listed or proposed for listing under the ESA, and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as Bureau sensitive by the State Director(s). All Federal candidate species, proposed species, and delisted species in the 5 years following delisting will be conserved as Bureau sensitive species. The objectives of the BLM special status species policy are 1) to conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for these species; and 2) to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA.

3.16.2 Field Reconnaissance

Field reconnaissance was conducted by URS Corporation (Phoenix, Arizona). Data collection and assessment utilized a rapid ecological assessment methodology first developed by The Nature Conservancy and applied to a range of other applications (Ruediger and Lloyd 2003). Inventory of the biological resources involved documenting the distribution of habitat types, special status species, specialty resources, and wildlife species in the Study Area. Data also were obtained from published secondary sources, electronic online queries through the AGFD (AGFD 2006, 2010) and USFWS (USFWS 2008b, 2011), and field verification using field reconnaissance.

Field reconnaissance was conducted on November 12, 2007 and May 14, 2008 for the CEC application studies associated with this Project and again on October 24, 2011 to verify and ground-truth the biological resources in the Study Area.

Field reconnaissance on November 12, 2007 concentrated on the area west of US 60; reconnaissance on May 14, 2008 was conducted along SR 74. Field reconnaissance on October 24, 2011 concentrated on BLM lands north of SR 74, the Hieroglyphic Mountains, Agua Fria River, and larger washes in the vicinity of the Proposed Action route, Alternative 2, and western portion of Alternative 3. Plant and wildlife species incidentally observed were noted throughout the course of the field reconnaissance.

Prior to field reconnaissance, initial data relating to the distribution of special status species and species of concern occurring or likely to occur in the Study Area were collected from agency lists. Lists of federal, state, and agency listed species and designated critical habitat

potentially occurring in the Study Area were obtained from the USFWS (USFWS 2008b, 2011) and AGFD (AGFD 2006, 2010).

3.16.3 General Wildlife

The diversity of animal species in the Study Area is high and reflects the diverse plant resources, topography, varied substrates, and the network of xeric desert washes surrounding the Study Area. Approximately 248 vertebrate species could occur along the Proposed Action route and other Action Alternative routes or nearby surrounding area. These species are tabulated taxonomically according to general habitat type in Appendix A of the Biological Resources Report (URS 2012i).

Lists of general wildlife species likely to occur within the Study Area were gathered from the best available published sources that focus on ecology and distributional biology of those groups of organisms. These included reptiles, amphibians, birds, and mammals. During field reconnaissance, the habitats for these species were evaluated and ground-truthed, and any wildlife or signs thereof were recorded. Species, likely to occur in the Study Area, organized by appropriate habitat, are presented in the sections that follow.

Wildlife of Creosote-White Bursage Desert Scrub Communities

Amphibians

Amphibians typically occurring in this community include the Arizona toad (*Bufo microscaphus)* and Couch's spadefoot toad (*Scaphiopus couchii*). The number of species is limited because of the lack of surface water associated with this habitat.

Reptiles

A number of reptiles typically inhabit this vegetation community. Typical species include the long-nosed leopard lizard (*Gambelia wislizenii*), desert iguana (*Dipososaurus dorsalis*), desert spiny lizard (*Sceloporus magister*), tiger whiptail lizard (*Aspidoscelis tigris*), desert horned lizard (*Phrynosoma platyrhinos*), glossy snake (*Arizona elegans*), nightsnake (*Hypsiglena torquata*), common king snake (*Lampropeltis getula*), Sonoran whipsnake (*Masticophis bilineatus*), gopher snake (*Pituophis catenifer*), sidewinder (*Crotalus cerastes*), and Mojave rattlesnake (*Crotalus scutulatus*). This habitat can provide historic movement areas for the desert tortoise (*Gopherus agassizi*), but the Sonoran palo verde-mixed cacti desert scrub vegetation community is its preferred habitat in Arizona (Brennan 2008).

Birds

Widespread generalist birds like the turkey vulture (*Cathartes aura*), golden eagle (*Aquila chrysaetos*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), common ground dove (*Columbina passerina*), burrowing owl (*Athene cunicularia*), northern mockingbird (*Mimus polyglottos*), and western meadowlark (*Sturnella neglecta*) could be found in this habitat type as well as arid habitat specialists that would include the white-winged dove (*Zenaida asiatica*), greater roadrunner (*Geococcyx californianus*), western kingbird (*Tyrannus verticalis*), Say's phoebe (*Sayornis saya*), and black-throated sparrow (*Amphispiza bilineata*) (Corman and Wise-Gervais 2005).

Mammals

Typical mammals in this habitat include the desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), little pocket mouse (*Perognathus longimembris*), Sonoran desert pocket mouse (*Chaetodipus penicillatus*), desert kangaroo rat (*Dipodomys deserti*), desert woodrat (*Neotoma lepida*), cactus mouse (*Peromyscus eremicus*), collared peccary (*Tayassu tajacu*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), kit fox (*Vulpes macrotis*), and badger (*Taxidea taxus*). Between 17 and 21 species of bats could forage in this habitat, but roost sites other than human dwellings are not available in creosotebush-white bursage vegetation (summary derived from Hoffmeister 1986).

Wildlife of Sonoran Palo Verde-Mixed Cacti Desert scrub

Wildlife species that include widespread generalists, rock-dwelling specialists, and cavity nesters are typical inhabitants of this habitat type.

Reptiles

Typical reptiles may include the western banded gecko (*Coleonyx variegates*), Gila monster (*Heloderma suspectum*), Great Basin collared lizard (*Crotaphytus bicinctores*), long-nosed leopard lizard (*Gambelia wislizenii*), chuckwalla (*Sauromalus ater*), desert spiny lizard (*Sceloporus magister*), tiger whiptail (*Aspidoscelis tigris*), nightsnake (*Hypsiglena torquata*), common king snake (*Lampropeltis getula*), gopher snake (*Pituophis melanoleucus*), Sonoran coral snake (*Micruroides euryxanthus*), western diamondback (*Crotalus atrox*), black-tailed rattlesnake (*Crotalus molossus*), and desert tortoise (Brennan 2008).

Birds

Birds typically found in this habitat type include the turkey vulture (*Cathartes aura*), golden eagle (*Aquila chrysaetos*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), common ground dove (*Columbina passerina*), barn owl (*Tyto alba*), great horned owl (*Bubo virginianus*), western meadowlark (*Sturnella neglecta*), Harris' hawk (*Parabuteo unicinctus*), Gambel's quail (*Callipepla gambelii*), white-winged dove (*Zenaida asiatica*), greater roadrunner (*Geococcyx californianus*), elf owl (*Micrathene whitneyi*), lesser nighthawk (*Chordeiles acutipennis*), Gila woodpecker (*Melanerpes uropygialis*), western kingbird (*Tyrannus verticalis*), ash-throated flycatcher (*Myiarchus cinerascens*), Say's phoebe (*Sayornis saya*), cactus wren (*Campylorhynchus brunneicapillus*), curve-billed thrasher (*Charadrius vociferus*), Bendaire's thrasher (*Toxostoma curvirostre*), phainopepla (*Phainopepla nitens*), pyrruloxia (*Cardinalis sinuatus*), black-throated sparrow (*Amphispiza bilineata*), and Scott's Oriole (*Icterus parisorum*) (Corman and Wise-Gervais 2005).

Mammals

Mammalian species typical of this habitat type include the desert cottontail (*Sylvilagus audubonii*), round-tailed ground squirrel (*Spermophilus tereticaudus*), Harris' antelope ground squirrel (*Ammospermophilus harrisii*), rock pocket mouse (*Chaetodipus intermedius*), Merriam's kangaroo rat (*Dipodomys merriami*), white throated woodrat (*Neotoma albigula*), desert woodrat (*Neotoma lepida*), cactus mouse *(Peromyscus eremicus)*, collared peccary (*Tayassu tajacu*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), cougar (*Puma concolor*), ringtail (*Bassariscus astutus*), and western spotted skunk

(*Spilogale gracilis*). Between 17 and 21 species of bats could forage in this vegetation community or locate roost sites in mountainous terrain coincident with the Sonoran palo verde mixed-cacti desert scrub (derived from accounts in Hoffmeister 1986).

The Lake Pleasant Herd Management Area for wild burros is located in this habitat just north of SR 74 (extending northeast of Lake Pleasant). The population of burros in this area remains fairly constant at about 357 animals. Animals are routinely removed or offered for adoption by the public in order to keep the population in balance with their habitat and other wildlife (BLM 2013).

Wildlife of North American Warm Desert Riparian Woodland

Although riparian communities are limited in the Study Area, they are typically highly productive and support a high diversity of mammals, birds, insects, and reptiles that make use of the abundant shade, water, and food resources. These areas are important ecological centers for wildlife and are particularly critical during periods of drought, which are frequent in the region. Due to the available water resources, moderate temperature, and abundant food resources, both plant and animal species diversity tends to be highest in riparian habitats in the desert environments of Arizona.

Amphibians

Riparian habitats in the Study Area could support concentrated wildlife activity. Areas with semi-permanent surface water on the Agua Fria River would be the most likely area to find potential amphibian species like the Arizona toad (*Bufo microscaphus)* and lowland leopard frog (*Rana yavapaiensis*).

Reptiles

Reptiles unique to riparian communities and potential inhabitants along the Agua Fria River where there is perennial surface water include the painted turtle (*Chrysemys picta*), Sonoran mud turtle (*Kinosternon sonoriense*), and spiny softshell (*Apalone spinifera*). Typical snakes would include the common king snake (*Lampropeltis getula*) and black-necked garter snake (*Thamnophis cyrtopsis*).

Birds

A wildlife biologist from URS observed the bird fauna along the riparian zone of the Agua Fria River, from an outlying access road, in May 2008. Several species were identified by sight or song during this visit. These species included the ash-throated flycatcher (*Myiarchus cinerascens*), Bell's vireo (*Vireo bellii*), mourning dove (*Zenaida macroura*), song sparrow (*Melospiza melodia*), yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens*). Other birds found in riparian areas in this part of Arizona, and potentially found along the Agua Fria River, include the willow flycatcher (*Empidonax traillii*), verdin (*Auriparus flaviceps*), bushtit (*Psaltriparus minimus*), Lucy's warbler (*Vermivora luciae*), and thicket-loving sparrows (Family: Emberizidae).

Mammals

No riparian-specific mammals occur in this part of Arizona, but the number of bat species in the Study Area predictably would be highest along the Agua Fria River within riparian habitat. Twelve to 17 species of bat could frequent the riparian habitat along the Agua Fria

River. Larger game mammals that require available drinking water likely depend greatly on this riparian community. Some of these species include the coyote (*Canis latrans*), bobcat (*Lynx rufus*), striped-skunk (*Mephitis mephitis*), and possibly the mule deer (*Odocoileus hemionus*).

3.16.4 Threatened, Endangered, and Special-status Species

Data were gathered from the USFWS, BLM, and AGFD to develop a list of special status wildlife species that could occur within the Study Area. Aerial photographs, Southwest ReGAP land cover data, soils, and topography data also were reviewed to determine the locations of biologically sensitive areas.

With the aid of Geographic Information System (GIS) data, digitized versions of the Study Area were overlain on maps depicting land cover, vegetation communities, topography, landforms, and, where available, optimal habitats for special status species. From the species data and the associated environmental data, the Study Area was assessed to determine where suitable habitat is present for each species. The potential for occurrence of special status species in the Study Area was evaluated based on (1) pertinent scientific literature, (2) qualitative comparisons between the known habitat requirements of each species and biotic and abiotic conditions found in the Study Area, and (3) field reconnaissance.

Results indicated that suitable habitat exists for 19 special status wildlife species within the Study Area. Examination of the local ecology and habitats within the Study Area indicated that adequate habitat, food, and shelter exist in order to support individuals or local populations of these species. The details of the legal protection, habitat requirements, habitat suitability, and distributions of these species are described in **Table 3.16-1**.

From this list, only the southwestern willow flycatcher (*Empidonax traillii extimus*) and Sonoran desert tortoise have federal listing status under the ESA. The southwestern willow flycatcher is listed as an endangered species. The Sonoran desert tortoise is listed as a candidate species. The bald eagle (*Haliaeetus leucocephalus*) and golden eagle are protected under the BGA. The remaining species include BLM sensitive species, USFWS species of concern, and state species of concern.

Table 3.16-1 Special Status Wildlife Species

(Footnotes at end of table.)

SPECIES	STATUS	HABITAT REQUIREMENTS	HABITAT SUITABILITY
AMPHIBIANS			
Lowland leopard frog *Rana yavapaiensis*	ESA-SC WSCA	A habitat generalist that inhabits aquatic systems from desert grasslands to piñon-juniper woodlands. Breeds in a variety of natural and man-made aquatic systems in both still water and running water habitats.	Suitable habitat in Study Area. Species has been documented on both the Agua Fria and Hassayampa rivers in Study Area. There is a AGFD HDMS record of occurrence within three miles (five kilometers) of the Proposed Action route or other Action Alternative routes (refer to Appendix D of the Biological Resources Report; URS 2012i).

Table 3.16-1 Special Status Wildlife Species (Continued)

(Footnotes at end of table.)

SPECIES	STATUS	HABITAT REQUIREMENTS	HABITAT SUITABILITY
REPTILES			
Sonoran desert tortoise *Gopherus agassizii* (*morfakai*)	ESA-C WSCA	Found in bajadas and rocky slopes of Sonoran desert scrub at elevations up to 5,330 feet (1,625 meters).	Suitable habitat in Study Area. Species has been documented in parts of the Study Area. Records are concentrated in or near the southern extension of the Hieroglyphic Mountains, and along the Hassayampa River, and in bajadas surrounding these areas. There is a AGFD HDMS record of occurrence within three miles (five kilometers) of the Proposed Action route or other Action Alternative routes (refer to Appendix D of the Biological Resources Report; URS 2012i). Species could be encountered along the Proposed Action route paralleling the Hassayampa River and the southern end of the Hieroglyphic Mountains and surrounding bajadas that include the Proposed Action route and Action Alternative routes.
Arizona chuckwalla *Sauromalus ater* (Arizona population)	ESA-SC	Predominantly found near cliffs, boulders or rocky slopes with rocks for basking and rock crevices for shelter. Can be found in rocky deserts, lava flows, hillsides, and outcrops. Creosotebush occurs throughout most of range.	Suitable habitat in Study Area where rocky hills or mountains with crevices or boulders exist. Most likely to occur in the Hieroglyphic Mountains along the Proposed Action route and Action Alternative routes.
Reticulate Gila monster *Heloderma suspectum suspectum*	State Protected	Most common in undulating rocky foothills, bajadas, and canyons. Less frequent or absent on open sandy plains.	Suitable habitat in Study Area where rocky hills or mountains with crevices or boulders exist. Most likely to occur in the Hieroglyphic Mountains along the Proposed Action route and Action Alternative routes.
BIRDS			
Snowy egret *Egretta thula*	WSCA	Found in marshes, lakes, ponds, lagoons, mangroves and shallow coastal habitats.	Limited suitable habitat in Study Area. Species has been documented near Study Area around the Hassayampa River Preserve and could potentially occur along the Agua Fria River. The species could occur occasionally where the Proposed Action route intersects the Agua Fria River.

Table 3.16-1 Special Status Wildlife Species (Continued)

(Footnotes at end of table.)

SPECIES	STATUS	HABITAT REQUIREMENTS	HABITAT SUITABILITY
Golden eagle *Aquila chrysaetos*	BLM-S BGA	Usually found in open country especially in hilly or mountainous regions. They nest on rock ledges, cliffs, or in large trees. In Arizona they are found in mountainous areas and are virtually vacant after breeding in some desert areas.	Limited suitable habitat in the Hieroglyphic Mountains. Undeveloped areas within the Study Area may serve as foraging habitat or perch sites. The species could be expected occasionally anywhere along the Proposed Action route or Action Alternative routes.
Bald eagle *Haliaeetus leucocephalus*	ESA-SC BLM-S WSCA BGA	Large trees or cliffs near water with abundant prey. Elevational range varies statewide.	Suitable habitat in the Study Area. Resident breeding species at Lake Pleasant. There is a AGFD HDMS record of occurrence within three miles (five kilometers) of the Proposed Action route or other Action Alternative routes (refer to Appendix D of the Biological Resources Report; URS 2012i).
Ferruginous hawk *Buteo regalis*	ESA-SC BLM-S WSCA	Found in open country in scrublands and grasslands. Winters in similar habitats and agricultural areas throughout the state.	Suitable habitat for overwintering occurs throughout most of the Study Area outside of mountainous areas. The species could be expected as a rare winter species or migrant along the Proposed Action route or Action Alternative routes from the Sun Valley Substation to the southern extension of the Hieroglyphic Mountains.
American peregrine falcon *Falco peregrinus anatum*	ESA-SC BLM-S WSCA	Found wherever sufficient prey is near cliffs and open expanses. Optimum peregrine habitat for roosting includes steep, sheer cliffs overlooking woodlands, riparian areas, or other habitats supporting abundant avian prey species.	Limited suitable habitat in Hieroglyphic Mountains. Roosting habitat for the species has been documented on Hassayampa River in nearby Yavapai County. The species could be expected occasionally anywhere along the Proposed Action route or Action Alternative routes outside the breeding season.

Table 3.16-1 Special Status Wildlife Species (Continued)

(Footnotes at end of table.)

SPECIES	STATUS	HABITAT REQUIREMENTS	HABITAT SUITABILITY
Western burrowing owl *Athene cunicularia hypugaea*	ESA-SC BLM-S	Habitat is variable in open, well-drained grasslands, steppes, deserts, prairies, and agricultural land. Often associated with burrowing mammals. Sometimes nest in open areas near human habitation such as vacant lots, golf courses, or airports. Often found in agricultural land in Maricopa County.	Suitable habitat throughout most of Study Area outside of rocky or mountainous areas. Species has been documented immediately east and south of the Study Area in the Phoenix metropolitan area. There is a AGFD HDMS record of occurrence within three miles (five kilometers) of the Proposed Action route or other Action Alternative routes (refer to Appendix D of the Biological Resources Report; URS 2012i). Species most likely to occur along the Proposed Action route from Sun Valley Substation to about US 60, but could occur along washes east of this to the southern tail of the Hieroglyphic Mountains.
Southwestern willow flycatcher *Empidonax traillii extimus*	ESA-LE WSC	Obligate of riparian habitats with dense canopy cover, a large volume of foliage, and surface water during midsummer. Avoids riparian areas found in steep, closed canyons.	Suitable habitat occurs in riparian forest on Agua Fria River between Lake Pleasant and SR 74. Species documented in this area in 2004 and 2005 and seems to be occupied intermittently (BLM 2010c, Ellis et al. 2008). USFWS is proposing critical habitat at the Hassayampa River Preserve. There is a AGFD HDMS record of occurrence within three miles (five kilometers) of the Proposed Action route or other Action Alternative routes (refer to Appendix D of the Biological Resources Report; URS 2012i).
LeConte's thrasher *Toxostoma lecontei*	BLM-S	Occurs in sparse creosote bursage desert scrub with widely spaced vegetation and little vertical structure.	Potential habitat occurs along the Proposed Action route in the vicinity of the Hassayampa River from the Sun Valley Substation to about US 60. Breeding bird survey records indicate the Study Area may be slightly outside the range of this species (Corman and Wise-Gervais 2005).
Belted kingfisher *Megaceryle alcyon*	WSCA	Occurs along perennial sources of water that are relatively clear.	Limited suitable habitat occurs along the Agua Fria River. While no perennial water occurs in the Agua Fria River within the Study Area, there are ephemeral flows, which could provide limited foraging habitat along the Proposed Action route or other Action Alternative routes that cross the Agua Fria River.

Table 3.16-1 Special Status Wildlife Species (Continued)

(Footnotes at end of table.)

SPECIES	STATUS	HABITAT REQUIREMENTS	HABITAT SUITABILITY
MAMMALS			
California leaf-nosed bat *Macrotus californicus*	ESA-SC BLM-S WSCA	Found in arid Sonoran desert scrub habitats with roost sites including caves and mines. Forages through matrix of shrubs, often gleaning prey from shrubs or ground.	Suitable habitat for foraging, but limited for roosting. Species has been documented at several localities throughout Study Area. There is a AGFD HDMS record of occurrence within three miles (five kilometers) of the Proposed Action route or other Action Alternative routes (refer to Appendix D of the Biological Resources Report; URS 2012i). Species expected to forage anywhere along the Proposed Action route or other Action Alternative routes.
Cave myotis *Myotis velifer*	ESA-SC BLM-S	Arid lower elevations usually around high cliffs and rugged rock outcrops from desert scrub to mid-elevation woodlands. Roosts in caves, mines during, and human built structures during the day.	Suitable habitat for foraging, but limited for roosting. Species has been documented in the northern part of the Study Area. There is a AGFD HDMS record of occurrence within three miles (five kilometers) of the Proposed Action route or other Action Alternative routes (refer to Appendix D of the Biological Resources Report; URS 2012i). Species is expected to forage anywhere along the Proposed Action route or other Action Alternative routes. Potential roost sites may occur in the southern tail of the Hieroglyphic Mountains near the Proposed Action route and Action Alternative routes.
Western red bat *Lasiurus blossevillii*	WSCA	Occurs in riparian and other wooded areas. Roosts by day in trees. May travel away from these habitats while foraging.	Limited suitable habitat in Study Area. A likely resident in urbanized areas south and east of Study Area and riparian corridors along Agua Fria River. There is a AGFD HDMS record of occurrence near Lake Pleasant within about four miles (6.4 kilometers) of the Proposed Action route or other Action Alternative routes (refer to Appendix D of the Biological Resources Report; URS 2012i). Species could forage and roost where the Agua Fria intersects the Proposed Action route or Alternative 2.

Table 3.16-1 Special Status Wildlife Species (Continued)

(Footnotes at end of table.)

SPECIES	STATUS	HABITAT REQUIREMENTS	HABITAT SUITABILITY
Western yellow bat *Lasiurus xanthinus*	WSCA	Habitat requirements are not well-known. Most often found roosting in palm trees, but will also utilize broad-leaved deciduous trees and tall yuccas (i.e., Joshua trees) as roost sites. Is likely a habitat generalist otherwise. Found in both native and human-influenced habitats.	Suitable habitat in Study Area. Species is a likely resident in urbanized areas on the southeastern border of Study Area and in riparian corridors with developed woodland along Agua Fria River, but it likely is a transient elsewhere in Study Area. Species could forage or roost where the Agua Fria intersects the Proposed Action route or other Action Alternative routes.
Greater western mastiff bat *Eumops perotis californicus*	ESA-SC BLM-S	Roosts in crevices in cliffs, large boulders, and occasionally in buildings. Forages in canyons and open desert scrub at hundreds to thousands of feet above the ground.	Suitable habitat for foraging, but limited for roosting. Potential roost habitat in Hieroglyphic Mountains. Species documented from greater Phoenix-metropolitan area. Species is expected to forage anywhere along the Proposed Action route or other Action Alternative routes. Limited roost habitat occurs in the southern tail of the Hieroglyphic Mountains near the Proposed Action route and Alternative 2.
Big free-tailed bat *Nyctinomops macrotis*	ESA-SC	Roosts in crevices in cliffs and canyons and occasionally in buildings. Occurs in Sonoran desert scrub, piñon-juniper woodlands, and conifer forests dominated by ponderosa pine or Douglas fir.	Potential habitat for foraging occurs throughout the Study Area. Limited roost habitat occurs in the Hieroglyphic Mountains. Species is expected to forage anywhere along the Proposed Action route or other Action Alternative routes. Limited roost habitat occurs in the southern tail of the Hieroglyphic Mountains near the Proposed Action route and Alternative 2.

Notes:
BLM = Bureau of Land Management; ESA = Endangered Species Act
Status Definitions: ESA: C = candidate; SC = species of concern. BLM: S = sensitive. BGA = Bald and Golden Eagle Protection Act. State of Arizona: WSCA = wildlife of special concern in Arizona. Habitat Suitability Definitions: Suitable habitat = habitat is large enough and has the qualities required by the species; Limited suitable habitat = habitat has the qualities required by the species, but may be too small to support the species.

3.16.4.1 Southwestern Willow Flycatcher

Southwestern willow flycatcher habitat is found in riparian forest/woodland vegetation along the Agua Fria River downstream of Waddell Dam. At the Agua Fria River, the Proposed Action route crosses south of riparian forests/woodlands adjacent to permanent or semi-permanent water in the Agua Fria River. Next to the Proposed Action route, the riparian forest/woodland is continuous in the 2,000 feet (610 meters) north of SR 74, but it is intermittent in the 1,500 feet (460 meters) south of SR 74. The terrain includes an incised arroyo or canyon that confines the riparian vegetation. Uplands along this segment have Sonoran palo verde-mixed cacti vegetation. The Alternative 3 route crosses the Agua Fria River about two miles (three kilometers) south of SR 74 at a point where surface water is absent or infrequent, and the surrounding vegetation and habitats differ little between the uplands and the river channel. Non-breeding residential adult southwestern willow flycatchers were detected in 2004 and 2006 in the expanse of riparian forest/woodland downstream of the Waddell Dam (refer to **Table 3.16-2**).

Along the Hassayampa River, suitable habitat for the southwestern willow flycatcher is found near Wickenburg, Arizona at the Hassayampa River Preserve operated by the Nature Conservancy. The Proposed Action route is located closest to the Hassayampa River at the Sun Valley Substation, located approximately 20 miles (32 kilometers) south of the Hassayampa River Preserve. At the closest point, the Proposed Action route is located within 10 miles (16 kilometers) of the Hassayampa River Preserve (refer to **Figure 3.16-1**). Nesting southwestern willow flycatchers have been detected from the Hassayampa River Preserve (refer to **Table 3.16-2**).

Southwestern willow flycatcher migration habitat is believed to occur primarily along riparian corridors. The Agua Fria and Hassayampa Rivers are likely migration corridors to breeding habitat north of the Study Area (Ellis et al. 2008).

AGFD conducted surveys at the Agua Fria River near Waddell Dam and Hassayampa River at the Hassayampa River Preserve. The survey results are summarized in **Table 3.16-2**.

The USFWS revised critical habitat for the southwestern willow flycatcher on January 3, 2013. Within the Study Area, the revision identifies the Hassayampa River at the Hassayampa River Preserve, approximately 5-10 miles northwest of the ROW where it crosses US 60, as critical habitat (refer to **Figure 3.16-1**). Critical habitat is not found within the Study Area.

Table 3.16-2 AGFD Southwestern Willow Flycatcher Survey Results

SITE NAME	YEAR	NO. SURVEYS	COUNTS					
			RESIDENT ADULTS	TERR	PAIRS	NESTS	UNK	MIGRANTS
Agua Fria River: Waddell Dam and Morgan City	1999	1	0	0	0	0	0	0
	2000	2	0	0	0	0	0	0
	2001	6	0	0	0	0	0	0
	2002	6	0	0	0	0	0	1
	2003	6	0	0	0	0	0	0
	2004	5	1	1	0	0	0	2
	2005	6	0	0	0	0	0	0
	2006	3	1	1	0	0	0	0
Hassayampa River Preserve	1993	2	0	0	0	0	0	0
	1994	2	0	0	0	0	0	0
	1996	4	0	0	0	0	0	0
	1997	3	2	1	1	1	0	0
	1998	3	4	3	1	1	0	0
	1999	3	2	2	0	0	0	1
	2000	1	0	0	0	0	3	0
	2001	5	0	0	0	0	0	0
	2002	2	4	3	1	0	0	0
	2003	3	2	2	0	0	0	0

TERR = Territories; UNK = Unknown status
Source: Ellis et al. 2008

3.16.4.2 Sonoran Desert Tortoise

The BLM has characterized desert tortoise habitat according to population density and suitability. This includes three classes. Category I habitat is essential for maintenance of large, viable populations; conflicts are resolvable; population density is medium to high or contiguous with medium or high density areas; and the population is increasing, stabilizing, or decreasing. Category II habitat may be essential to maintenance of viable populations; most conflicts are resolvable; population density is medium to high or low density and contiguous with medium or high density areas; and the population is stable or decreasing. Category III habitat is not essential to maintenance of viable populations; most conflicts are not resolvable; population density is low to medium and not contiguous with medium or high density areas; the population is stable or decreasing. Category II habitat occurs in the Hieroglyphic Mountains and is crossed by the Proposed Action route and Alternative 1 (refer to **Figure 3.16-1**). Category III habitat occurs largely south of SR 74 from the Morgan Substation to approximately 179th Avenue and is crossed by portions of Alternative 2 and 3 (refer to **Figure 3.16-1**).

Table 3.16-3 summarizes desert tortoise habitat categories within the Proposed Action route, ACC-certificated route, and the other Action Alternative routes. To compare the Proposed Action route with other Action Alternatives routes, acreage calculations for each desert tortoise habitat category is provided in **Table 3.16-3**.

Table 3.16-3 Acres of Desert Tortoise Habitat by Category within the Study Area

	I	II	III
Proposed Action route (200 ft. ROW)	0	135	192
ACC-Certificated route	0	932	1,453
Alternative 1 (200 ft. ROW and additional corridor)	0	1,811	1,602
Alternative 2 route (200 ft. ROW and additional corridor)	0	0	1,279
Alternative 3 route (200 ft. ROW)	0	0	244
Sub-alternative (200 ft. ROW)	0	0	0
Primary Segment Common to All Action Alternatives (200 ft. ROW)	0	0	0

Source: AIDTT 1996.

3.16.4.3 Bald Eagle

Suitable habitat for the bald eagle is found in the Study Area. A resident breeding population can be found on the upper end of Lake Pleasant at the confluence of the Agua Fria River.

The bald eagle nest enclosure zone is located five miles (eight kilometers) north of the Proposed Action route (refer to **Figure 3.16-1**). The AGFD Bald Eagle Management Program has conducted occupancy and reproductive assessments of the Lake Pleasant breeding population through nest monitoring and aerial survey since 1984 (AGFD 2011b, SWBEMC 2011). Results indicate that habitat use is concentrated along the Agua Fria arm of Lake Pleasant (SWBEMC 2011). In addition, studies of the movements and migratory patterns of Arizona bald eagles (Hunt et al. 1992, SWBEMC 2011) suggest that overwintering bald eagles and Arizona born juveniles pass through the Study Area in the vicinity of the Agua Fria River/Lake Pleasant and Hassayampa River. The most likely location where the bald eagle could occur, relative to the Proposed Action route or Action Alternative routes, would be along the riparian strand of vegetation on the north side of SR 74.

3.16.4.4 Golden Eagle

Suitable habitat for the golden eagle is found in the Study Area. GIS models of golden eagle nesting substrate based on digital elevation models and contour data indicates potential nesting substrate is located in the Castle Hot Springs/Hells Canyon Wilderness and Vulture Mountains (refer to **Figure 3.16-1**). Occurrence, use, and movement of golden eagles in the Study Area are not well understood. Review of the AGFD HDMS database indicates no record of golden eagles within three miles (five kilometers) of the Proposed Action route or

other Action Alternative routes. AGFD is conducting golden eagle nest surveys in select locations in Arizona; however, surveys have not occurred in the Study Area. Undeveloped areas within the Study Area may provide foraging habitat or perch sites.

3.16.4.5 Other Special Status Species

Other special status species that are conservation priority species include the USFWS birds of conservation concern and species of greatest conservation need that are listed in the *Arizona State Wildlife Action Plan* (SWAP) (USFWS 2008b, AGFD 2006). Fourteen of the 28 species on the birds of conservation concern list that occur in the Sonoran Desert have potential to occur in the vicinity of the Study Area. Four of those—the bald eagle, peregrine falcon, burrowing owl, and LeConte's thrasher—were described in **Table 3.16-1**.

The prairie falcon (*Falco mexicanus*) nests on cliffs and forages in open shrublands and grasslands. Nesting habitat is limited to the Hieroglyphic Mountains or is absent altogether in the Study Area, and potential foraging habitat encompasses the entire Study Area. The nearest confirmed breeding record of the species is in the White Tank Mountains (Corman and Wise-Gervais 2005).

The elf owl (*Micrathene whitneyi*) most often inhabits densely wooded dry desert washes, but also utilizes riparian gallery forests, and upland desert scrub with columnar cacti. Suitable habitat for the species occurs throughout the Study Area, with the most suitable habitat occurring along the Proposed Action route or Action Alternative routes east of US 60. The species is a probable breeder in the Study Area (Corman and Wise-Gervais 2005).

Costa's hummingbird (*Calypte costae*) is a seasonal breeding resident that is present in the Study Area from October to late May or early June (Corman and Wise-Gervais 2005). The species primarily utilizes upland Sonoran desert scrub and North American Warm Desert Wash habitats. The most suitable habitat for the species occurs along the Proposed Action route or Action Alternative routes east of US 60.

The Gila woodpecker (*Melanerpes uropygialis*) and gilded flicker (*Colaptes chrysoides*) are relatively common and are year-round residents in the Study Area (Corman and Wise-Gervais 2005). These species occur in upland Sonoran desert scrub with saguaros and in North American Warm Desert Wash habitats. These species were observed at several localities along or near the Proposed Action route in the southern tail of the Hieroglyphic Mountains during field reconnaissance of the Study Area. The most suitable habitat for these two species occurs along the Proposed Action route or Action Alternative routes east of US 60.

Bell's vireo (*Vireo belli*) is a probable breeding resident in the Study Area. It most frequently occurs in North American Warm Desert Wash habitat and occasionally Sonoran desert upland vegetation (Corman and Wise-Gervais 2005). This species was observed during field reconnaissance north of SR 74 in riparian woodland along the Agua Fria River. Bell's vireo could occur at the intersection of the Agua Fria River and the Proposed Action route.

The crissal thrasher (*Toxostoma crissale*) is a non-migratory resident species of the Chihuahuan, Sonoran, and Mojave deserts. The species utilizes a variety of vegetation communities, but consistently inhabits tall, dense brush and shrub thickets in dry desert washes, irrespective of the plant composition (Corman and Wise-Gervais 2005). Individuals

have been encountered in mountain chaparral and oak-piñon-juniper woodlands in parts of Arizona (Corman and Wise-Gervais 2005). Crissal thrashers are a resident breeding species in the Study Area (Corman and Wise-Gervais 2005). The most suitable habitat for the crissal thrasher occurs at desert washes along the Proposed Action route or Action Alternative routes east of US 60.

Lucy's warbler (*Oreothlypis luciae*) is a breeding resident in the Study Area. It occurs in North American Warm Desert Wash habitat and occasionally upland Sonoran desert scrub (Corman and Wise-Gervais 2005). The most suitable habitat for the species occurs along the Proposed Action route or Action Alternative routes east of US 60.

The yellow warbler (*Dendroica petechia*) is a possible breeding resident in the Study Area. It occurs in riparian woodlands and forests (Corman and Wise-Gervais 2005). This species was observed during field reconnaissance north of SR 74 in riparian woodland along the Agua Fria River. The yellow warbler could occur at the intersection of the Agua Fria River and the Proposed Action route.

Lawrence's goldfinch (*Spinus lawrencei*) is a potential irregular winter resident that could inhabit the Study Area during regional irruptions (Davis 1999). The species would inhabit open areas along river floodplains, agricultural areas, and other lowland habitats with abundant seeds (Davis 1999). Potential habitat occurs in much of the Study Area, particularly along the Agua Fria River. Other potential habitat areas could occur along washes that intersect the Proposed Action route between US 60 and the upland transition of the southern extent of the Hieroglyphic Mountains.

Fourteen species of greatest conservation need in the SWAP potentially occur in the vicinity of the Study Area. All but two of these have been described already.

The sage thrasher (*Oreoscoptes montanus*) is a likely winter resident in the Study Area. It uses semi-open habitats with scattered shrubs, desert scrub, and sagebrush (Reynolds et al. 1999). Possible overwintering habitat occurs throughout the Study Area along the Proposed Action route and Action Alternative routes.

The red-naped sapsucker (*Sphyrapicus nuchalis*) is a possible winter resident in the Study Area. It uses riparian woodlands, oak savanna, oak-juniper, pine-oak, and pure-oak woodland in mountains to approximately 5,600 feet in its winter range in Arizona (Walters et al. 2002). Suitable overwintering habitat occurs along the Agua Fria River between Lake Pleasant and SR 74. The red-naped sapsucker could occur at the intersection of the Agua Fria River and the Proposed Action route.

3.16.5 Wildlife Linkages

Wildlife linkages are continuous corridors of land that encompass swaths of native vegetation and undisturbed landscapes that maintain the ability of wildlife to move between large blocks of native habitats (Beier et al. 2006). Linkages can include larger wildlife corridors and smaller wildlife movement areas that include expanses of vegetation with a similar structure or plant composition (Beier et al. 2006). These include continuous mountainous areas, washes, rivers, and valleys. Beier et al. (2006) identified and defined the parameters of a wildlife corridor northeast of the Study Area that connects between the Wickenburg Mountains and Vulture Mountains. The shortest distance between the Proposed Action route

and this wildlife corridor is about 7.4 miles (11.9 kilometers). The terrestrial linkage could accommodate the mule deer, badger (*Taxidea taxus*), black-tailed jackrabbit, javelina (*Tayassu tajacu*), desert tortoise, and Gila monster (Beier et al. 2006).

The major natural wildlife linkages in the Study Area are the Agua Fria River and Hassayampa River that facilitate movement of wildlife north and south through the Study Area. The land around the Hassayampa River remains largely undeveloped, and the connectivity remains largely intact along this wildlife corridor from the Vulture and Wickenburg Mountains in the north to the Maricopa Mountains, White Tank Mountains, Buckeye Hills, and Gila River in the south. The Agua Fria River remains largely in its natural state from Lake Pleasant to about Jomax Road, but it is surrounded by urban development south of Jomax Road to its confluence with the Gila River. However, the channel retains much of its native character and should remain functional as a corridor for many wildlife species. Lake Pleasant is a major obstruction to movement from the Study Area to places north along the Agua Fria River.

Smaller washes between the Hassayampa River and Agua Fria River are important linkages between local habitat patches. These provide strands of vegetation that wildlife can use for forage and cover (Levick et al. 2008). During times when these washes carry ephemeral flow, these can help amphibians and aquatic reptiles to move between areas with permanent water (Levick et al. 2008). In addition to serving as movement areas, milder microclimates along wash corridors allow these areas to serve as primary habitat and foraging sites for some species and secondary habitat during droughts and heat waves for other species (Levick et al. 2008). North American Warm Desert washes also are important cores of biodiversity in the desert (Levick et al. 2008).

The CAP canal was identified as a wildlife linkage in the *Arizona Wildlife Linkages Assessment* (ADOT 2006). This manmade structure can serve as a movement corridor for some wildlife species along its east-west route. Bats and birds are the primary beneficiaries of the CAP canal as a wildlife linkage. Some terrestrial wildlife species with generalized habitat requirements also utilize this as a movement area. Yet the CAP Canal also prevents or inhibits movement of terrestrial wildlife from moving along historic north-south movement areas.

TABLE OF CONTENTS

CHAPTER 4 Environmental Consequences 4-1

4.1 Introduction 4-1
4.1.1 Impact Assessment 4-1
4.1.1.1 Effects/Impacts 4-1
4.1.1.2 Direct Effects 4-1
4.1.1.3 Indirect Effects 4-1
4.1.1.4 Mitigation for Impacts 4-2
4.1.1.5 Cumulative Effects 4-2
4.1.1.6 Significance 4-2
4.1.1.7 Indicators 4-3
4.1.2 Environmental Effect Categories 4-3
4.1.3 Bradshaw-Harquahala Proposed RMPA 4-3
4.2 Air Quality and Climate Change 4-4
4.2.1 Indicators and Methods 4-4
4.2.2 SIP Conformity 4-5
4.2.3 Direct and Indirect Effects by Alternative 4-6
4.2.3.1 Impacts Common to All Action Alternatives 4-6
4.2.3.2 Proposed Action 4-10
4.2.3.3 Alternative 1: Proposed Action with Additional Corridor 4-14
4.2.3.4 Alternative 2: ROW South of SR 74 4-16
4.2.3.5 Alternative 3: Carefree Highway Route 4-18
4.2.3.6 State Trust Land Route Variation Sub-alternative 4-20
4.2.3.7 No Action Alternative 4-21
4.2.4 Mitigation and Residual Effects 4-22
4.2.5 Unavoidable Adverse Impacts 4-24
4.3 Cultural Resources 4-24
4.3.1 Indicators and Methods 4-24
4.3.2 Direct and Indirect Effects by Alternative 4-25
4.3.2.1 Proposed Action 4-25
4.3.2.2 Alternative 1: Proposed Action with Additional Corridor 4-29
4.3.2.3 Alternative 2: ROW South of SR 74 4-29
4.3.2.4 Alternative 3: Carefree Highway Route 4-29
4.3.2.5 State Trust Land Route Variation Sub-alternative 4-30
4.3.2.6 No Action Alternative 4-31
4.3.3 Mitigation and Residual Effects 4-31
4.3.4 Unavoidable Adverse Impacts 4-32
4.4 Geology and Minerals 4-33
4.4.1 Indicators and Methods 4-33
4.4.2 Direct and Indirect Effects by Alternative 4-33
4.4.2.1 Impacts Common to All Action Alternatives 4-33
4.4.2.2 Proposed Action 4-34
4.4.2.3 Alternative 1: Proposed Action with Additional Corridor 4-35

4.4.2.4 Alternative 2: ROW South of SR 74 4-36
4.4.2.5 Alternative 3: Carefree Highway Route 4-36
4.4.2.6 State Trust Land Route Variation Sub-alternative 4-36
4.4.2.7 No Action Alternative 4-37
4.4.3 Mitigation and Residual Effects 4-37
4.4.4 Unavoidable Adverse Impacts 4-37
4.5 Hazardous Materials and Hazardous and Solid Waste 4-37
4.5.1 Indicators and Methods 4-37
4.5.2 Direct and Indirect Effects by Alternative 4-38
4.5.2.1 Impacts Common to All Action Alternatives 4-38
4.5.2.2 Proposed Action 4-40
4.5.2.3 Alternative 1: Proposed Action with Additional Corridor 4-41
4.5.2.4 Alternative 2: ROW South of SR 74 4-42
4.5.2.5 Alternative 3: Carefree Highway Route 4-42
4.5.2.6 State Trust Land Route Variation Sub-alternative 4-42
4.5.2.7 No Action Alternative 4-42
4.5.3 Mitigation and Residual Effects 4-42
4.5.4 Unavoidable Adverse Impacts 4-43
4.6 Land Use and Range Resources 4-43
4.6.1 Indicators and Methods 4-43
4.6.2 Direct and Indirect Effects by Alternative 4-44
4.6.2.1 Impacts Common to All Alternatives 4-52
4.6.2.2 Proposed Action 4-56
4.6.2.3 Alternative 1: Proposed Action with Additional Corridor 4-59
4.6.2.4 Alternative 2: ROW South of SR 74 4-60
4.6.2.5 Alternative 3: Carefree Highway Route 4-62
4.6.2.6 State Trust Land Route Variation Sub-alternative 4-63
4.6.2.7 No Action Alternative 4-64
4.6.3 Mitigation and Residual Effects 4-64
4.6.4 Unavoidable Adverse Impacts 4-65
4.7 Public Health and Safety (Noise, Electromagnetic Fields, and Fire) 4-65
4.7.1 Indicators and Methods 4-65
4.7.1.1 Noise 4-65
4.7.1.2 Electromagnetic Fields 4-65
4.7.1.3 Fire 4-65
4.7.2 Direct and Indirect Effects by Alternative 4-66
4.7.2.1 Impacts Common to All Action Alternatives 4-66
4.7.2.2 Proposed Action 4-68
4.7.2.3 Alternative 1: Proposed Action with Additional Corridor 4-69
4.7.2.4 Alternative 2: ROW South of SR 74 4-70
4.7.2.5 Alternative 3: Carefree Highway Route 4-70
4.7.2.6 State Trust Land Route Variation Sub-alternative 4-71
4.7.2.7 No Action Alternative 4-72
4.7.3 Mitigation and Residual Effects 4-72
4.7.3.1 General 4-72
4.7.3.2 Noise 4-73

4.7.3.3 Fire ... 4-73
4.7.4 Unavoidable Adverse Impacts ... 4-74
4.7.4.1 Noise ... 4-74
4.7.4.2 Fire ... 4-74
4.8 Paleontology ... 4-74
4.8.1 Indicators and Methods ... 4-74
4.8.2 Direct and Indirect Effects by Alternative ... 4-75
4.8.2.1 Impacts Common to All Action Alternatives ... 4-75
4.8.2.2 Proposed Action ... 4-75
4.8.2.3 Alternative 1: Proposed Action with Additional Corridor ... 4-75
4.8.2.4 Alternative 2: ROW South of SR 74 ... 4-76
4.8.2.5 Alternative 3: Carefree Highway Route ... 4-76
4.8.2.6 State Trust Land Route Variation Sub-alternative ... 4-76
4.8.2.7 No Action Alternative ... 4-76
4.8.3 Mitigation and Residual Effects ... 4-77
4.8.4 Unavoidable Adverse Impacts ... 4-77
4.9 Recreation and Special Designations ... 4-77
4.9.1 Indicators and Methods ... 4-77
4.9.2 Direct and Indirect Effects by Alternative ... 4-77
4.9.2.1 Impacts Common to All Action Alternatives ... 4-77
4.9.2.2 Proposed Action ... 4-80
4.9.2.3 Alternative 1: Proposed Action with Additional Corridor ... 4-85
4.9.2.4 Alternative 2: ROW South of SR 74 ... 4-85
4.9.2.5 Alternative 3: Carefree Highway Route ... 4-87
4.9.2.6 Sub-alternative: State Trust Land Route Variation ... 4-89
4.9.2.7 No Action Alternative ... 4-89
4.9.3 Mitigation and Residual Effects ... 4-89
4.9.4 Unavoidable Adverse Impacts ... 4-90
4.10 Socioeconomics and Environmental Justice ... 4-90
4.10.1 Indicators and Methods ... 4-90
4.10.1.1 Indicators ... 4-91
4.10.1.2 Methods ... 4-92
4.10.2 Direct and Indirect Effects by Alternative ... 4-95
4.10.2.1 Effects Common to All Action Alternatives ... 4-95
4.10.2.2 Socioeconomics ... 4-95
4.10.2.3 Environmental Justice ... 4-120
4.10.2.4 No Action Alternative ... 4-124
4.10.3 Mitigation and Residual Effects ... 4-125
4.10.4 Unavoidable Adverse Impacts ... 4-125
4.11 Soils ... 4-126
4.11.1 Indicators and Methods ... 4-126
4.11.2 Direct and Indirect Effects by Alternative ... 4-126
4.11.2.1 Impacts Common to All Action Alternatives ... 4-126
4.11.2.2 Proposed Action ... 4-128
4.11.2.3 Alternative 1: Proposed Action with Additional Corridor ... 4-128
4.11.2.4 Alternative 2: ROW South of SR 74 ... 4-129

4.11.2.5 Alternative 3: Carefree Highway Route 4-129
4.11.2.6 State Trust Land Route Variation Sub-alternative 4-130
4.11.2.7 No Action Alternative 4-130
4.11.3 Mitigation and Residual Effects 4-130
4.11.4 Unavoidable Adverse Impacts 4-132
4.12 Transportation and Traffic 4-132
4.12.1 Indicators and Methods 4-132
4.12.2 Direct and Indirect Effects by Alternative 4-133
4.12.2.1 Impacts Common to All Action Alternatives 4-133
4.12.2.2 Proposed Action 4-135
4.12.2.3 Alternative 1: Proposed Action with Additional Corridor 4-137
4.12.2.4 Alternative 2: ROW South of SR 74 4-137
4.12.2.5 Alternative 3: Carefree Highway Route 4-137
4.12.2.6 State Trust Lands Route Variation Sub-alternative 4-138
4.12.2.7 No Action Alternative 4-138
4.12.3 Mitigation and Residual Effects 4-138
4.12.4 Unavoidable Adverse Impacts 4-138
4.13 Vegetation Resources, including Noxious and Invasive Weeds and Special Status Plants 4-139
4.13.1 Indicators and Methods 4-139
4.13.1.1 Indicators 4-139
4.13.1.2 Impact Levels 4-139
4.13.2 Direct and Indirect Effects by Alternative 4-141
4.13.2.1 Impacts Common to All Action Alternatives 4-141
4.13.2.2 Proposed Action 4-144
4.13.2.3 Alternative 1: Proposed Action with Additional Corridor 4-144
4.13.2.4 Alternative 2: ROW South of SR 74 4-145
4.13.2.5 Alternative 3: Carefree Highway Route 4-145
4.13.2.6 State Trust Land Route Variation Sub-alternative 4-145
4.13.2.7 No Action Alternative 4-145
4.13.3 Mitigation and Residual Effects 4-146
4.13.3.1 Vegetation Communities 4-146
4.13.3.2 Special Status BLM, USFWS Listed Species, and Arizona Native Plant Law 4-147
4.13.3.3 Invasive and Noxious Plants 4-147
4.13.4 Unavoidable Adverse Impacts 4-147
4.14 Visual Resources 4-148
4.14.1 Indicators and Methods 4-148
4.14.1.1 Indicators 4-148
4.14.1.2 Methods 4-148
4.14.2 Direct and Indirect Effects by Alternative 4-152
4.14.2.1 Impacts Common to All Action Alternatives 4-152
4.14.2.2 Proposed Action 4-157
4.14.2.3 Alternative 1: Proposed Action with Additional Corridor 4-168
4.14.2.4 Alternative 2: ROW South of SR 74 4-168
4.14.2.5 Alternative 3: Carefree Highway Route 4-173

4.14.2.6 State Trust Land Route Variation Sub-alternative 4-176
4.14.2.7 No Action Alternative 4-179
4.14.3 Comparison of Alternatives 4-179
4.14.4 Mitigation and Residual Effects 4-179
4.14.4.1 Micrositing 4-179
4.14.4.2 Structure Type 4-180
4.14.4.3 Color 4-186
4.14.5 Unavoidable Adverse Impacts 4-186
4.15 Water Resources 4-186
4.15.1 Indicators and Methods 4-186
4.15.1.1 Indicators 4-186
4.15.1.2 Methods 4-187
4.15.2 Direct and Indirect Effects by Alternative 4-187
4.15.2.1 Impacts Common to All Action Alternatives 4-187
4.15.2.2 Proposed Action 4-191
4.15.2.3 Alternative 1: Proposed Action with Additional Corridor 4-192
4.15.2.4 Alternative 2: ROW South of SR 74 4-193
4.15.2.5 Alternative 3: Carefree Highway Route 4-194
4.15.2.6 State Trust Land Route Variation Sub-alternative 4-195
4.15.2.7 No Action Alternative 4-196
4.15.3 Mitigation and Residual Effects 4-197
4.15.4 Unavoidable Adverse Impacts 4-197
4.16 Wildlife Resources, including Special Status Wildlife and Migratory Birds 4-197
4.16.1 Indicators and Methods 4-197
4.16.1.1 Indicators 4-197
4.16.1.2 Impact Levels 4-197
4.16.2 Direct and Indirect Effects by Alternative 4-198
4.16.2.1 Impacts Common to All Action Alternatives 4-198
4.16.2.2 Proposed Action 4-205
4.16.2.3 Alternative 1: Proposed Action with Additional Corridor 4-206
4.16.2.4 Alternative 2: ROW South of SR 74 4-206
4.16.2.5 Alternative 3: Carefree Highway Route 4-207
4.16.2.6 State Trust Land Route Variation Sub-alternative 4-207
4.16.2.7 No Action Alternative 4-208
4.16.3 Mitigation and Residual Effects 4-208
4.16.3.1 Mitigation specific to Sonoran Desert Tortoise 4-209
4.16.4 Unavoidable Adverse Impacts 4-210
4.17 Irreversible and Irretrievable Commitment of Resources 4-211
4.17.1 Air Quality and Climate Change 4-211
4.17.2 Cultural Resources 4-211
4.17.3 Geology and Minerals 4-211
4.17.4 Hazardous Materials and Hazardous and Solid Waste 4-212
4.17.5 Land Use and Range Resources 4-212
4.17.6 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire) 4-212
4.17.7 Paleontology 4-212

4.17.8 Recreation and Special Designations 4-213
4.17.9 Socioeconomics and Environmental Justice 4-213
4.17.10 Soils 4-213
4.17.11 Transportation and Traffic 4-213
4.17.12 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants 4-214
4.17.13 Visual Resources 4-214
4.17.14 Water Resources 4-214
4.17.15 Wildlife Resources, Including Special Status Wildlife and Migratory Birds 4-214
4.18 Relationship of Short-term Uses and Long-term Productivity of Resource 4-215
4.18.1 Air Quality and Climate Change 4-215
4.18.2 Cultural Resources 4-215
4.18.3 Geology and Minerals 4-216
4.18.4 Hazardous Materials and Hazardous and Solid Waste 4-216
4.18.5 Land Use and Range Resources 4-216
4.18.6 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire) 4-216
4.18.7 Paleontology 4-217
4.18.8 Recreation and Special Designations 4-217
4.18.9 Socioeconomics and Environmental Justice 4-217
4.18.10 Soils 4-217
4.18.11 Transportation and Traffic 4-218
4.18.12 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants 4-218
4.18.13 Visual Resources 4-218
4.18.14 Water Resources 4-218
4.18.15 Wildlife Resources, Including Special Status Wildlife and Migratory Birds 4-218
4.19 Cumulative Impacts 4-219
4.19.1 Cumulative Impacts Area 4-219
4.19.2 Past, Present, and Reasonably Foreseeable Actions 4-223
4.19.3 Air Quality and Climate Change 4-224
4.19.4 Cultural Resources 4-226
4.19.5 Geology and Minerals 4-228
4.19.6 Hazardous Materials and Hazardous and Solid Waste 4-229
4.19.7 Land Use and Range Resources 4-229
4.19.7.1 Land Use 4-229
4.19.7.2 Range Resources 4-232
4.19.8 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire) 4-233
4.19.8.1 Noise 4-233
4.19.8.2 EMFs 4-234
4.19.8.3 Fire 4-234
4.19.9 Paleontology 4-235
4.19.10 Recreation and Special Designations 4-236

4.19.11 Socioeconomics and Environmental Justice 4-237
4.19.12 Soils 4-239
4.19.13 Transportation and Traffic 4-240
4.19.14 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants 4-243
4.19.15 Visual Resources 4-244
4.19.15.1 Visual Resources Focus Area 4-244
4.19.16 Water Resources 4-248
4.19.16.1 Surface Water 4-249
4.19.16.2 Wetlands 4-249
4.19.17 Wildlife Resources, Including Special Status Wildlife and Migratory Birds 4-249

LIST OF TABLES

Table 4.1-1 Summary of Terms Used to Describe Effects in the EIS 4-3
Table 4.2-1 Commuter Vehicle Distribution 4-8
Table 4.2-2 Maximum Monthly Construction Emission Rates - Proposed Action 4-9
Table 4.2-3 Total Construction Related GHG Emissions (as CO_2e) - Proposed Action 4-10
Table 4.2-4 Wind Erosion Emissions (TONS/YR) - Proposed Action 4-14
Table 4.2-5 Operational Phase Vehicular Emissions (TONS/YR) - Proposed Action 4-14
Table 4.2-6 Maximum Monthly Construction Emission Rates – Alternative 1 4-15
Table 4.2-7 Maximum Monthly Construction Emission Rates – Alternative 2 4-17
Table 4.2-8 Wind Erosion Emissions (TONS/YR) – Alternative 2 4-17
Table 4.2-9 Maximum Monthly Construction Emission Rates – Alternative 3 4-19
Table 4.2-10 Wind Erosion Emissions (TONS/YR) – Alternative 3 4-19
Table 4.2-11 Maximum Monthly Construction Emission Rates – State Trust Land Route Variation Sub-Alternative 4-21
Table 4.3-1 Visual Impacts 4-28
Table 4.3-2 Known Cultural Resource Sites along Potential Alignment Shift 4-32
Table 4.5-1 Possible Hazardous Materials Used in the Project 4-39
Table 4.6-1 Description of Land Use and Range Resources Effects Levels 4-44
Table 4.6-2 Surface Management Crossed by the Action Alternatives (miles) 4-45
Table 4.6-3 Jurisdiction Crossed by the Action Alternatives (miles) 4-45
Table 4.6-4 Existing and Future Land Use Crossed by the Action Alternatives (miles) 4-46
Table 4.6-5 BLM Rights-of-Way Crossed by the Action Alternatives 4-47
Table 4.6-6 Grazing Allotments Crossed by the Action Alternatives (miles) 4-48
Table 4.6-7 AUMs on Grazing Allotments Crossed by the Action Alternatives 4-49
Table 4.6-8 AUMs Removed from Production in the Short Term by the Action Alternatives 4-50
Table 4.6-9 AUMs Removed from Production in the Long Term by the Action Alternatives 4-51

Table 4.6-10 Acres of Grazing Allotments Removed from Production in the Short Term 4-54
Table 4.6-11 Acres of Grazing Allotments Removed from Production in the Long Term 4-55
Table 4.9-1 Description of Recreation and Special Designations Effects Levels 4-78
Table 4.10-1 Construction Cost Estimates 4-96
Table 4.10-2 Economic Impacts of Construction: 2013-2016 4-97
Table 4.10-3 Private Property that would be Affected by the Proposed Action 4-98
Table 4.10-4 Planned Development Acreages Potentially Affected by the Proposed Action by Land Use Type 4-100
Table 4.10-5 Estimated Annual Property Tax Revenues from Project Lands by Jurisdiction 4-101
Table 4.10-6 State Trust Land Characteristics 4-102
Table 4.10-7 Economic Impacts of Construction: 2013-2016 4-108
Table 4.10-8 Private Property that would be Affected by Alternative 2 4-109
Table 4.10-9 Saddleback Heights Planned Development Acreages Potentially Affected by the Alternative 2 by Land Use Type 4-109
Table 4.10-10 Private Property that would be Affected by Alternative 3 4-112
Table 4.10-11 Planned Development Acreages Potentially Affected by Alternative 3 by Land Use Type 4-114
Table 4.10-12 Economic Impacts of Construction, State Trust Lands Route Variation Sub-alternative: 2013-2016 4-117
Table 4.10-13 Comparison of Mileage of ROW Crossing or Adjoining Private Property Within and Outside the Environmental Justice Community 4-122
Table 4.12-1 Description of Transportation and Traffic Effects Levels 4-132
Table 4.12-2 Effect of Construction Traffic on Existing Annual Average Daily Traffic 4-135
Table 4.13-1 Description of Effect Magnitude Criteria with regard to Vegetation Resources 4-139
Table 4.14-1 Degree of Contrast Criteria 4-149
Table 4.14-2 Summary of Terms Used to Describe Visual Effects 4-150
Table 4.14-3 Comparison of Visual Resource Impacts by Alternative 4-181
Table 4.16-1 Description of Effect Magnitude Criteria with regard to Wildlife Resources 4-198
Table 4.16-2 Summary of Impacts to Special Status Species 4-200
Table 4.19-1 Cumulative Impacts Areas by Resource and Rationale 4-219
Table 4.19-2 Land Ownership by CIA 4-222
Table 4.19-3 Potential Quantifiable Permanent Disturbance from Reasonably Foreseeable Projects within the Two-Mile CIA 4-223
Table 4.19-4 Existing Quantifiable Land Uses in Two-Mile CIA 4-226
Table 4.19-5 Planned Residential Developments within the CIA 4-231
Table 4.19-6 Regional Highways Annual Average Daily Traffic within the CIA 4-240

APPENDICES

APPENDIX 4A Visual Contrast Rating Forms
APPENDIX 4B Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities

This page intentionally left blank.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter presents the results of environmental impact analysis for the various resources introduced in Chapter 3 of this EIS.

This chapter includes the following:

Section 4.1 provides an introduction to the chapter and the definitions for terms used to describe environmental effects.

Sections 4.2 through **4.16** discuss the environmental consequences for each resource and use brought forward for analysis.

Sections 4.17 through **4.19** discuss irreversible and irretrievable commitments of resources, the relationship between short-term uses and long-term productivity of resources, and cumulative effects by resource.

All figures referenced in the text of this chapter are found in the Figures section of Volume II.

4.1.1 Impact Assessment

The Proposed Action and Action Alternatives outlined in Chapter 2 may cause, directly or indirectly, changes in the human environment. This EIS assesses and analyzes these potential changes and discloses the effects to the decision-makers and public. This process of disclosure is one of the fundamental aims of NEPA.

Many concepts and terms used when discussing impacts assessment may not be familiar to the average reader. The following sections attempt to clarify some of these concepts.

4.1.1.1 Effects/Impacts

The terms “effect” and “impact” are synonymous under NEPA. Effects may refer to ecological, aesthetic, historical, cultural, economic, social, or health-related phenomena that may be caused by the Proposed Action or Action Alternatives. Effects may be direct, indirect, or cumulative in nature. Cumulative effects are analyzed at the end of this chapter.

4.1.1.2 Direct Effects

A direct effect occurs at the same time and place as the action. Direct and indirect effects are discussed in combination under each affected resource.

4.1.1.3 Indirect Effects

Indirect effects are reasonably foreseeable effects that occur later in time or are removed in distance from the action. Direct and indirect effects are discussed in combination under each affected resource.

4.1.1.4 Mitigation for Impacts

Where applicable, mitigation measures are proposed in this document. If residual effects remain after the mitigation is applied, those effects are described as well. Mitigation measures are means to address environmental impacts that are applied in the impact analysis to reduce intensity or eliminate the impacts. To be adequate and effective, CEQ rules (40 CFR 1508.20) require that mitigation measures fit into one of five categories:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action;

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or

(e) Compensating for the impact by replacing or providing substitute resources or environments.

4.1.1.5 Cumulative Effects

Effects to a resource are cumulative when the effects from the Project are added to the effects (anticipated effects) from other past, present, or future projects in the cumulative effects area for the Project. The cumulative effects area may be larger than the direct effects area. Cumulative effects are discussed in detail in **Section 4.19** below.

4.1.1.6 Significance

The word "significant" has a very particular meaning when used in a NEPA document.

Significance is defined by CEQ as a measure of the *intensity* and *context* of the effects of a major federal action on, or the importance of that action to, the human environment. Significance is a function of the beneficial and adverse effects of an action on the environment.

Intensity refers to the severity or level of magnitude of impact. Public health and safety, proximity to sensitive areas, level of controversy, unique risks, or potentially precedent-setting effects are all factors to be considered in determining intensity of effect. This EIS will primarily use the terms Major, Moderate, Minor, or Negligible in describing the intensity of effects.

Context means that the effect(s) of an action must be analyzed within a framework, or within physical or conceptual limits. Resource disciplines; location, type, or size of area affected (e.g., local, regional, national); and affected interests are all elements of context that ultimately determine significance. Both long- and short-term effects are relevant.

4.1.1.7 Indicators

An impact indicator is an element or parameter used to determine change (and the intensity of change) in a resource. Impact indicators are the consistent currency used to determine change (and the intensity of change) in a resource. Working from an established existing condition (i.e., baseline conditions described in Chapter 3) this indicator would be used to predict or detect change in a resource related to causal effects of proposed actions. Use of the term "significant" when referring to effects indicates some threshold for a particular impact indicator is exceeded.

4.1.2 Environmental Effect Categories

The following environmental effect categories (**Table 4.1-1**) are presented to define relative levels of effect intensity and context and to provide a common language when describing effects. The definitions in the table below are general. Descriptors are specifically defined for certain resources when the general definitions presented in this table are inadequate.

Table 4.1-1 Summary of Terms Used to Describe Effects in the EIS

ATTRIBUTE OF EFFECT		DESCRIPTION
Magnitude (Intensity)	Negligible	No measurable change in current conditions.
	Minor	A small, but measurable change in current conditions.
	Moderate	An easily discernible and measurable change in current conditions.
	Major	A large, easily measurable change in current conditions.
Duration	Short-term	During construction up to 10 years.
	Long-term	More than 10 years.

Note: Descriptions are typical, but may vary by resource.

4.1.3 Bradshaw-Harquahala Proposed RMPA

The Bradshaw-Harquahala RMP may be amended to allow the BLM to:

- Establish a single-use utility corridor on BLM-managed public lands that would contain the transmission line ROW, and change the existing VRM Class designations on both sides of SR 74 (from Class III to Class IV) to allow for the utility corridor under the Proposed Action.
- Establish a multiuse utility corridor 0.5-mile wide on BLM-managed public lands on the north side of SR 74 and also the entire key-shaped block of BLM-managed public lands south of SR 74 that would contain the ROW for the transmission line, and change the existing VRM Class designations of the area (from Class III to Class IV) to allow for the utility corridor under Alternative 1.

- Establish a multiuse utility corridor for the entire key-shaped block of BLM-managed public lands south of SR 74 and change the existing VRM Class designations of the area (from Class III to Class IV) to allow for the utility corridor under Alternative 2.

Designating a multiuse utility corridor would identify the area where multiple future linear utilities could be developed. The locations for the utility corridors in the Bradshaw-Harquahala RMP would be selected to minimize impacts to and from the affected environment.

Amending the Bradshaw-Harquahala RMP to designate a new utility corridor and changing the VRM classification would not actually involve any ground disturbing activities, but would allow for ground disturbing activities to occur. Impacts from amending the plan to allow for designating a utility corridor could affect mineral resources, land use, socioeconomics, and other resources. Changing the VRM classification would affect the management of visual resources within the proposed utility corridor. These impacts are discussed under the corresponding sections below. Because amending the plan to allow designating a utility corridor would not immediately involve ground disturbance or development, this action would not directly or indirectly impact the remaining resources in the proposed corridor (air quality and climate change; geology, minerals and soils; paleontological resources; water resources; vegetation; wildlife; threatened, endangered, and sensitive species; range resources; recreation; cultural resources; public health and safety; or hazardous materials and waste). Direct or indirect impacts that arguably could be associated with amending a plan to designate a utility corridor would be the same impacts as those disclosed in relation to the transmission line's construction, operation, maintenance, and decommissioning activities.

Future development of linear utilities within a designated multiuse utility corridor would involve ground disturbing activities that would impact resources within the proposed corridor; ground disturbing activities for additional utilities would likely be similar to those described for the Proposed Action, depending upon the proposed utility. However, site-specific analyses of the impacts to resources of future proposed linear utilities within the corridor would be required prior to authorization of such utilities. Anticipated cumulative impacts of these potential future actions are analyzed in **Section 4.19**.

4.2 AIR QUALITY AND CLIMATE CHANGE

4.2.1 Indicators and Methods

The primary indicators for air quality and climate change include:

- The quantified emissions of air pollutants in tons per month for each type of regulated pollutant, also GHG emissions in total tons emitted for the construction phase, and a recurring ton/yr basis for the operational (post-construction) phase.
- Compliance with the NAAQS that define the allowable ambient concentrations of potential air pollutants.

4.2.2 SIP Conformity

The General Conformity Rule promulgated by EPA on November 30, 1993 (58 FR 63214) requires that any *federal actions* conform to the SIP applicable to the specific project area in order to ensure that emissions from the project activities would not cause or contribute to violations of NAAQS and would not cause a delay of attaining compliance with NAAQS. A *federal action* is defined in 40 CFR § 93.152 as any activity engaged in or permitted, licensed, funded, approved by or otherwise supported by a federal department or agency. A portion of this Project would be developed on BLM-managed public land, therefore construction, operation, maintenance, and decommissioning activities associated with the Project would be considered a federal action.

The General Conformity Rule requires that federal actions be evaluated for conformity to the local SIP if the project is located in a non-attainment area for a specific pollutant and if the project emissions of that specific pollutant would exceed the de minimis level for that pollutant. The de minimis threshold levels (above which a full SIP Conformity analysis would be required) are based on the annual emission rates of each pollutant (tons per year). If project emissions are below de minimis thresholds, the federal action is considered exempt from the General Conformity Rule and no further evaluation is necessary.

Since the Project is located in an area designated as 'Serious' non-attainment for PM_{10} and 'Marginal' non-attainment for ozone, the de minimis levels are 70 tons per year for PM_{10}, 100 tons per year for NO_x (ozone precursor), and 100 tons per year for VOC (ozone precursor). The de minimis level for carbon monoxide (CO) is 100 tons per year for all nonattainment and maintenance areas. No portion of the Project Area is located in a CO nonattainment area. A portion of Maricopa County is designated as a CO attainment area that is subject to a maintenance plan. As a result, the 100 ton per year limit applies. Emissions calculations for the Construction and Operational phases of the Project demonstrate that PM_{10}, NO_x, VOC, and CO emissions would be below de minimis levels for SIP Conformity and therefore, the Project would be considered a minor source of air emissions and further analysis under the General Conformity Rule is not necessary.

Although the Project would be a minor source for particulate emissions, the applicant-committed particulate control measures (set forth in Maricopa County Air Pollution Control Rules 310 and 310.01) would serve to minimize particulate emissions due to ground disturbance activities (the largest contributor to $PM_{10}/PM_{2.5}$ emissions), thereby ensuring compliance with SIP requirements.

4.2.3 Direct and Indirect Effects by Alternative

4.2.3.1 Impacts Common to All Action Alternatives

Emissions impacts common to all Action Alternatives include PM_{10}, $PM_{2.5}$, CO, NO_x, VOC, SO_x, and GHG such as CO_2, methane (CH_4), and N_2O. Sources of emissions from the Project include products of combustion from construction vehicles and construction equipment, fugitive dust from earthmoving activities during construction, and fugitive dust from unpaved roads due to vehicular traffic during construction.

Emissions from construction related activities are subject to a high degree of variability due to the transient nature of the emission sources and variability in the amount and type of activities. Therefore, assessment of emissions impacts were based on worst-case (maximum) monthly emission rates (during highest activity construction months) which were then compared to the most recent cumulative emission rates for all pollutant sources in Maricopa County based on the most current county emissions inventory.

The most current emission rates for CO and VOC were obtained from the 2005 MCAQD Periodic Emissions Inventory Report and those for PM_{10}, $PM_{2.5}$, NO_x, and SO_x were obtained from the 2008 MCAQD Periodic Emissions Inventory Report (June 2011 updated version). The total emission rates for each pollutant from the county emissions inventory reports were used for comparison to the total construction emissions impacts from the Project. The impact of construction emissions from the Project is expressed as a percentage increase for each pollutant in the MCAQD emissions inventory. For the Proposed Action and for each of the Action Alternatives, the increase of VOC, CO, NO_x, SO_x, and GHGs would be essentially the same; however, the total PM_{10} and $PM_{2.5}$ impacts may differ slightly (but not significantly) for each option due to the slight variation in total acreage disturbed.

Construction

Construction Equipment Exhaust Emissions

Emissions from construction equipment would result from the combustion of fossil fuels (primarily diesel fuel used in compression ignition engines) used to power construction equipment and would comprise the bulk of the total gaseous pollutants (CO, VOC, NO_x, SO_x, GHGs) emitted from the Project. Exhaust from various types of construction equipment taken into consideration for emissions estimation include bulldozers, graters, cranes, pickup trucks, water trucks, hole diggers, backhoes, dump trucks, drills, pole haul trucks, drum pullers, tensioners, splicing equipment, 2-ton trucks, 5-ton trucks, and boom trucks. The types of activities that would take place during the construction phase include access road construction, pad preparation, surveying, hole digging, foundation installation, hauling and erecting transmission line structures, conductoring (stringing of power lines), clean up, and reclamation.

Criteria pollutant emissions (PM_{10}, $PM_{2.5}$, CO, VOC, NO_x, SO_x) from construction equipment exhaust (diesel engines) were estimated using the EPA document *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling-Compression Ignition* (EPA 2004). The emission factors were calculated using the methodology presented in the document and are based on Tier II engine performance (engine emissions standards adopted

in 2004 and in widespread use today). The emission factor calculations account for the highly variable loads placed on engines used in construction activities which result in the transient nature of pollutant emissions. The Non-Road Model utilizes steady state emission factors along with various adjustment factors to account for transient effects and changes in emissions due to the aging of the engines. The emission factors calculated from the Non-Road Model were then used in conjunction with parameters such as engine size (horsepower rating), number of units on site, and the estimated average hours of operation for each type of equipment. It should be noted that construction equipment would utilize ultra-low sulfur diesel (15 ppm) that would result in lower SO_2 emissions as well as lower particulate matter and NO_x emissions.

GHG emissions from the construction equipment were also estimated. Carbon dioxide and CH_4 emissions from construction equipment were calculated based on *Off-Road Mobile Source Emission Factors* from the *South Coast Air Quality Management District (SCAQMD) Emissions Handbook (1993, 2008)* using 2012 as the basis year. N_2O emissions were calculated using the emission factor for diesel construction equipment from *Appendix H of Form EIA-1605* published by the U.S. Energy Information Administration (EIA; 2007). Emissions of CH_4 and N_2O were then converted to their CO_2e using their respective Global Warming Potentials (GWP) of 21 and 310. The resulting CO_2e emissions due to CH_4 and N_2O were subsequently added to the CO_2 emissions to determine the total GHG impact expressed in terms of CO_2e.

Helicopter emissions would possibly be another potential source of emissions during construction. At this time it is not known if the stringing of the conductors would involve the use of a helicopter; however, since this is a possible option, the emissions estimates include the use of one helicopter with a 450 hp engine utilizing kerosene jet fuel (Jet A). For purposes of emission estimation, the helicopter was assumed to be a Hughes MD500N (representative of a typical helicopter used in wire stringing operations) and a conservative estimate of 200 LTO (landing/take-off) cycles per month and 90 hours of operation per month was assumed. Criteria pollutant emission estimates were based on emission factors and fuel consumption rates from the document *Guidance on the Determination of Helicopter Emissions* (Federal Office of Civil Aviation in Switzerland 2009), except for SO_2 emissions which were based on a 0.3 percent maximum sulfur content permitted in Jet A fuel (ASTM 1655 specification) and assuming 100 percent conversion of elemental sulfur to SO_2. GHG emissions estimates for CO_2, CH_4, and N_2O were calculated using jet fuel emission factors from the *Appendix H of Form EIA-1605* from EIA.

Construction equipment exhaust emissions due to combustion of fossil fuels, employee commuter vehicles, and concrete transport trucks would be similar for the Proposed Action and all Action Alternatives since the amount and duration of construction activities would be nearly identical for all options.

Concrete Truck Transport Emissions

Concrete required for the transmission line structures would be transported to the construction site by truck. Exhaust emissions were estimated to account for the truck transportation air quality impacts. The calculations were based on the assumption of 10 roundtrips per day, assuming a roundtrip distance of 44 miles and a total of 100 days of

concrete truck transport. The estimated horsepower rating of the concrete trucks was assumed to be 400 hp. Emission factors for *Heavy-Heavy Duty Vehicles* from the *SCAQMD Emissions Handbook (1993, 2008)* were used in conjunction with the aforementioned assumptions to estimate the criteria pollutant and GHG emissions, with the exception of N_2O emissions calculations which were based on the heavy duty diesel truck emission factor from EIA *Appendix H of Form EIA-1605*.

Employee Commuter Vehicle Emissions

Emissions generated due to employee commuter vehicle exhaust (employee tailpipe emissions) would consist of PM_{10}, $PM_{2.5}$, CO, VOC, NO_x, SO_x, and GHGs. Emission factors used in the calculation of criteria pollutant emissions were based on Mobile 6.2 vehicle emissions modeling conducted as part of the emissions inventory for the Rosemont Copper Project in southern Arizona. Mobile 6.2 emission factors are dependent on the ambient temperature input data, vehicle travel speeds, operating mode, and fuel volatility. The Rosemont facility is located approximately 30 miles southeast of Tucson, Arizona, and has a nearly identical climate and meteorological profile to the proposed location of this Project, making the Mobile 6.2 output suitable for use in determining vehicle emission factors. Vehicle usage and operating modes for the two sites are also likely to be similar. The Mobile 6.2 program output provides base emission factors for various vehicle types which are designated as follows: LDGV – Light Duty Gasoline Vehicles, LDGT12 – Light Duty Gasoline Truck (less than 6000 lbs), LDGT34 – Light Duty Gasoline Truck (greater than 6000 lbs), HDGV – Heavy Duty Gasoline Vehicles, LDDV – Light Duty Diesel Vehicles, LDDT – Light Duty Diesel Trucks, HDDV – Heavy Duty Diesel Vehicles, and MC – Motorcycles. A site specific vehicle distribution based on the proportionate number of each vehicle type is then used in conjunction with the base emission factors to derive a weighted composite emission factor for each pollutant. The vehicle distribution was adjusted to more accurately reflect the anticipated vehicle mix for this Project. The resulting composite emission factors (based on the adjusted distribution) were then used in the subsequent calculation of vehicle emissions for the Proposed Action and all Action Alternatives.

The following vehicle mix listed in **Table 4.2-1** was utilized for the composite emission factor calculations.

Table 4.2-1 Commuter Vehicle Distribution

VEHICLE TYPE	LDGV	LDGT12	LDGT34	HDGV	LDDV	LDDT	HDDV	MC
% of Total	33.3%	33.3%	10%	5%	6%	6%	5%	1.4%

The employee vehicle emission calculations were based on the maximum number of workers per vehicle, the duration of each phase of construction (days), and the round trip distance of each vehicle commute. A five-day work week was used as a basis, and for most phases of construction a 40-mile round trip commute was assumed, except for the Survey phase which assumed a 72-mile round trip commute.

GHG emission factors from employee commuter vehicles were also calculated using the same vehicle mix used for criteria pollutant emissions, in conjunction with *On-Road Emission Factors* from *SCAQMD Emissions Handbook (1993, 2008)* for CO_2, and EIA *Appendix H of Form EIA-1605* emission factors for CH_4 and N_2O (US Energy Information Administration 2007). The resulting composite emission factors were then used in the calculation of GHG emissions.

Ozone Impacts

As shown in **Table 4.2-2**, the maximum increases of VOC, CO, and NO_x in the ozone non-attainment area would be 0.003 percent, 0.003 percent, and 0.087 percent, respectively.

Table 4.2-2 Maximum Monthly Construction Emission Rates - Proposed Action

EMISSIONS CATEGORY	MAXIMUM MONTHLY EMISSIONS (TONS/MO)					
	VOC	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2
Construction Equipment Exhaust	0.53	2.79	7.73	0.25	0.23	0.04
Temporary Ground Disturbance	0	0	0	4.08	0.85	0
Employee Commuting	0.01	0.09	0.01	0.0004	0.0004	0.0001
Concrete Truck Transportation	0.02	0.07	0.20	0.0099	0.0085	0.0003
TOTAL	0.55	2.94	7.94	4.33	1.08	0.04
MCAQD Inventory (ton/mo)	21,963	109,950	9,139	4,012	1,126	151
TOTAL as % of MCAQD Inventory	0.003%	0.003%	0.087%	0.11%	0.10%	0.028%

Notes: VOC and CO emission inventory figures based on 2005 MCAQD Inventory Report (MCAQD 2005)
PM_{10}, SO_2 and NOx emission inventory figures based on 2008 MCAQD Inventory Report (MCAQD 2008)
MCAQD ton/mo figures based on dividing annual rate in MCAQD Inventory Reports by 12

Maricopa County is currently designated as a non-attainment area for ozone. The number of violations based on the 8-hour standard of 0.08 ppm (established in 1997) has been on a declining trend over the past few years. However, in March, 2008 the EPA lowered the 8-hour ozone NAAQS from 0.08 ppm to 0.075 ppm which has resulted in more monitoring sites showing exceedances of the new standard. In April, 2012 the EPA provided final designations of ozone non-attainment areas and Maricopa County was designated as 'Marginal' non-attainment (for parts of the county). At least part of the Project would be in or near the ozone non-attainment area; however, the minute magnitude of the NO_x and VOC emissions from the Project make it highly unlikely that the emissions impacts from the Project would cause or contribute to an exceedance of the ozone NAAQS despite the more stringent ozone standard. It is also important to note that these construction related emissions increases would be temporary (i.e. the Project would not result in a permanent stationary source with recurring emissions) and that these figures represent the maximum monthly emission rates expected during the construction phase of the Project.

Greenhouse Gas Impacts

GHG emissions from the Project were calculated by considering emissions from construction equipment exhaust, employee commuter vehicle tailpipe exhaust, and concrete truck exhaust. Emissions from these activity categories, expressed in terms of CO_2e for the entire duration of the Project are shown in **Table 4.2-3**.

Table 4.2-3 Total Construction Related GHG Emissions (as CO_2e) - Proposed Action

ACTIVITY CATEGORY	TOTAL TONS
Construction Equipment Exhaust	616.9
Employee Commuting	113.5
Concrete Truck Transportation	93.5
PROJECT TOTAL	823.9

As can be seen in **Table 4.2-3**, the total CO_2e emissions from construction activities over the duration of the Project would be 823.9 tons with construction equipment being the source of about 75 percent of total GHG emissions. At this time, there is no established method to assess the impact of GHG emissions and in the absence of any applicable ambient standard or significance levels, a meaningful assessment of the climate change impacts of the Project cannot be determined. Therefore, the climate change impact analysis for the Project is limited to quantification of the GHG emissions for the duration of the Project.

Operations, Maintenance, and Decommissioning

Post-construction emissions at the site would mainly consist of wind-blown dust emissions (PM_{10}/$PM_{2.5}$) and emissions from vehicular traffic due to surveying and maintenance activities.

Maintenance activities would be performed on an as-needed basis, would be intermittent in nature, and generally of short duration. As such, residual emissions from these activities would likely be minimal and much smaller in magnitude than construction emissions.

4.2.3.2 Proposed Action

Construction

Ground Disturbance/Earthmoving Emissions

The majority of the particulate emissions from the Proposed Action would be due to fugitive dust emissions caused by ground disturbance activities. Fugitive dust emissions (PM_{10} and $PM_{2.5}$) would result from earthmoving activities such as road construction, grading, land clearing, excavation, cut and fill operations, track-out emissions, and vehicular traffic over paved and unpaved access roads. Additional fugitive emissions would be generated due to

windblown dust (erosion) from areas where the ground is disturbed and exposed to wind effects.

Particulate emissions from construction related ground disturbances (earthmoving activities) were estimated using the generally accepted emission factors of 0.42 ton/acre-month for heavy construction (cut and fill activities), 0.11 ton/acre-month for light construction activities, and 0.13 ton/acre-month for ground disturbance activities that are a mix of material handling and transfers, vehicular traffic, and some heavy construction activity. The heavy construction emission factor (0.42 ton/acre-month) was developed by Midwest Research Institute (MRI) for the SCAQMD as a worst-case emission factor for large scale projects in California. The general construction activity emission factor was developed by MRI based on observations of construction sites in Las Vegas and California and site specific emission factors from EPA AP-42, Compilation of Air Pollution Emission Factors documents.

$PM_{2.5}$ (fine particulate) emissions are a subset of PM_{10} and may be present in the fugitive dust emissions generated from ground disturbance activities. $PM_{2.5}$ emissions for ground disturbance were calculated by multiplying the calculated PM_{10} emissions by the $PM_{2.5}/PM_{10}$ fraction of 0.208 from the document *SCAQMD Methodology to Calculate $PM_{2.5}$ and $PM_{2.5}$ Significance Thresholds* (Krause and Smith 2006). This fractional value is generally accepted for estimating $PM_{2.5}$ emissions from ground disturbance activities.

Ground disturbance emissions calculations were performed for both temporary and permanent ground disturbance activities. The particulate emissions were determined for each of the main construction activity categories involving ground disturbance emissions (Access Road Construction, Laydown Material Sites, Transmission Structure Pad Construction, and Transmission Conductor Pulling/Tensioning Sites) by multiplying the total disturbed acreage of each activity category by the appropriate emission factor and the expected duration of each activity and then adjusting the emission rate by the expected control efficiency.

The ton per month PM_{10}/ $PM_{2.5}$ emission rate estimate used to assess impacts was based on maximum construction activity which is expected to occur during the overlapping activities of support structure construction, foundation pad construction, access road construction, and laydown material site construction. The ground disturbance emission calculations assume that 50 percent of the access road acreage, 75 percent of the laydown material site acreage, 10 percent of the transmission line support structure/foundation acreage, and 20 percent of the transmission line conductoring sites would be actively disturbed at any given time during the construction phase of the Project. This conservative approach results in an estimate that accounts for any short-term peak emission rates of PM_{10} and $PM_{2.5}$ during the brief periods when these activities would take place concurrently and present a cumulative impact. The estimated maximum $PM_{10}/PM_{2.5}$ ground disturbance emission rates based on this methodology are 4.08 and 0.85 tons per month, respectively.

For temporary ground disturbances, expected control efficiencies ranged from 61 percent for the initial set up and preparation of each activity category (during which control measures may not be fully implemented and up to optimal performance) to 74 percent for the principal earthmoving phase (at which time the control measures such as watering would be fully implemented and at optimal performance). The control efficiencies of 61 percent and 74 percent were obtained from the Western Regional Air Partnership (WRAP; 2006) Dust

Control Handbook and are based on watering frequencies of every 3.1 and 2.1 hours, respectively.

A portion of the Project would be constructed within the designated PM_{10} non-attainment area. Due to its PM_{10} non-attainment status, the MCAQD has instituted stringent fugitive dust control regulations and control measure requirements for earthmoving projects within the county. Therefore, frequent watering would be required along with other mitigation measures to minimize fugitive dust emissions impacts as described in **Section 4.2.4**.

Total Emissions Impact Summary for Construction Activities

Emissions from each activity category were calculated and summed on a ton per month basis. A summary of the total maximum monthly emissions (worst-case ton/month emission rate) for criteria pollutants and the corresponding MCAQD emission inventory amounts is shown in **Table 4.2-2**.

Particulate Impacts

As shown in **Table 4.2-2**, at levels of maximum construction activity, the emission increase of PM_{10} and $PM_{2.5}$ in the PM_{10} non-attainment area would be 0.11 percent and 0.10 percent, respectively. Calculations indicate that maximum total PM_{10} and $PM_{2.5}$ emission rates due to construction (which includes fugitive dust, vehicular particulate, and construction equipment emissions) would be 4.33 and 1.08 tons per month and 39.97 and 10.49 tons per year, respectively. Maricopa County is designated as 'Serious' non-attainment for PM_{10} and in attainment for $PM_{2.5}$. Given the transient nature of the PM_{10} and $PM_{2.5}$ emissions, and the fact that, even during peak construction activity, the resulting emissions represent relatively small increases (less than one percent) above the current emission rates in Maricopa County, it is highly unlikely that the Project would cause or contribute to an exceedance or violation of any applicable particulate standard. The nearest particulate monitoring station to the Project is the Zuni Hills monitor at 109th Ave. and Deer Valley Rd. (about 8.5 miles south of the Project Area) which has not shown any exceedances of the PM_{10} standard. In 2010, the maximum 24-hour PM_{10} value at the monitor was 70 $\mu g/m^3$, well below the 24-hour PM_{10} Primary Standard of 150 $\mu g/m^3$.

Furthermore, the stringent particulate control measures set forth in Maricopa County dust control regulations (Maricopa County Air Pollution Control Rule 310 and 310.01) and the commitment by APS to effectively implement those measures on a frequent and consistent basis would serve to minimize particulate emissions due to ground disturbance (earthmoving) activities (the largest contributor to $PM_{10}/PM_{2.5}$ emissions). Specific dust control measures are discussed in **Section 4.2.4**.

Additionally, the use of ultra-low sulfur diesel fuel in the construction equipment (now required in virtually all of the U.S. and Arizona) would result in lower SO_2 and NO_x emissions (fine particulate precursors) thereby resulting in lower $PM_{10}/PM_{2.5}$ emissions.

Operations, Maintenance, and Decommissioning

Post-Construction Operation Phase Fugitive Emissions

Fugitive particulate emissions would occasionally be emitted due to road maintenance activities. Emissions calculations for PM_{10} and $PM_{2.5}$ were performed utilizing the acreages

of the permanently disturbed areas and then accounting for control efficiencies due to mitigation measures such as revegetation, graveling, and the use of dust palliatives. The calculations involved three separate areas: transmission line spur roads, acreage around the transmission structures, and access roads along the ROW. Overall control efficiencies for fugitive dust mitigation measures were developed taking into account the estimated percentage of each area to be revegetated and/or treated with other measures such as dust palliatives or gravel. Control efficiency estimates of 90 percent for revegetation, 84 percent for dust palliatives, and 84 percent for gravel are provided for in the WRAP (2006) Dust Control Handbook. A conservative assumption of 84 percent control efficiency for all three control measures was used for calculating emissions. The 84 percent control efficiency was used in conjunction with the pro-rated acreage percentage estimates to develop overall control efficiencies for the transmission line spur roads, areas around the transmission structures, and the ROW access roads. The resultant overall control efficiencies were then used in conjunction with the total acreages of each of the three areas to estimate the emissions. The AP-42 emission factor of 0.11 ton/acre-month for fugitive emissions from general construction was used.

Permanent structures such as the transmission line towers and foundation pads help to prevent wind erosion and minimize fugitive dust emissions. An overall control efficiency of 81.5 percent for the transmission structure acreages was used which is based on fugitive dust mitigation due to revegetation and transmission line structures/foundations occupying 50 percent of the transmission structure acreage, and the use of revegetation, gravel and dust palliatives in the remaining 50 percent of the area. Similarly, for the transmission line spur roads an overall control efficiency of 75.6 percent was used, assuming that 90 percent of the acreage would be controlled by revegetation and the use of dust palliatives and/or gravel as needed (providing 84 percent control efficiency). For the access road along the ROW, an overall control efficiency of 71.4 percent was used, assuming relatively low traffic volumes, and that 85 percent of the acreage would be controlled with the use of dust palliatives, gravel, and revegetation (at 84 percent control efficiency). The emission calculations indicate maximum annual PM_{10} and $PM_{2.5}$ operational emissions (post-construction) of 9.8 and 2.0 ton per year, respectively.

Residual Wind Erosion Fugitive Emissions

Post-construction emission estimates of wind-blown dust emissions (PM_{10}/$PM_{2.5}$) were calculated using emission factors from AP-42 and assuming 50 percent control for revegetation after activity stops, and 50 percent improvement in control efficiency each year thereafter due to subsequent vegetation growth. $PM_{2.5}$ emissions were calculated by multiplying the PM_{10} emission rates by the $PM_{2.5}/PM_{10}$ fraction of 0.208 from the document *SCAQMD Methodology to Calculate $PM_{2.5}$ and $PM_{2.5}$ Significance Thresholds* (Krause and Smith 2006). Emission estimates for PM_{10} and $PM_{2.5}$ due to wind erosion for each year after the conclusion of construction activities are shown in **Table 4.2-4**.

Table 4.2-4 Wind Erosion Emissions (TONS/YR) - Proposed Action

	YEAR 1	YEAR 2	YEAR 3	YEAR 4
PM_{10}	1.6	0.8	0.4	0.2
$PM_{2.5}$	0.3	0.2	0.1	0.04

Residual Vehicular Exhaust Emissions

Post-construction operational phase emission estimates due to emissions from employee vehicular traffic associated with surveying and maintenance activities were based on an estimated 19,993 vehicle miles traveled per year and assuming the same vehicle distribution in the construction phase documented in **Table 4.2-1**. The resulting yearly residual emissions are shown in **Table 4.2-5**.

Table 4.2-5 Operational Phase Vehicular Emissions (TONS/YR) - Proposed Action

	VOC	CO	NOX	PM_{10}	$PM_{2.5}$	SOX	$CO_2(e)$
Vehicle Emissions	0.017	0.203	0.025	0.278	0.034	0.0002	16.4

There is no established method to assess the impact of GHG emissions and in the absence of any applicable ambient standard or significance levels, a meaningful assessment of the climate change impacts of the post-construction GHG emissions cannot be determined. Therefore, the climate change impact analysis for the post-construction operational phase of the Project is limited to quantification of the GHG emissions from vehicular exhaust related to surveying and maintenance activities.

4.2.3.3 Alternative 1: Proposed Action with Additional Corridor

Construction

Ground Disturbance/Earthmoving Emissions

Emissions from ground disturbance and earthmoving activities would be similar to those from the Proposed Action, with the maximum $PM_{10}/PM_{2.5}$ ton/month emission rate due to temporary disturbances at 4.08 and 0.85 tons/month, respectively. The emissions calculation methodology is identical to that used for the Proposed Action.

Total Emissions Impact Summary for Construction Activities

Emissions from each activity category were calculated and summed on a ton per month basis. A summary of the total maximum monthly emissions (worst-case ton/month emission rate) for criteria pollutants and the corresponding MCAQD emission inventory amounts is shown in **Table 4.2-6**.

Particulate Impacts

Particulate impacts would be identical to the Proposed Action and are due to construction equipment exhaust, concrete truck transport exhaust, employee vehicle exhaust and ground disturbance/earthmoving activities. The calculation methodology and impact assessment are identical to that used for the Proposed Action. As shown in the preceding table, at levels of maximum construction activity, the emission increase of PM_{10} and $PM_{2.5}$ in the PM_{10} non-attainment area would be 0.11 percent and 0.10 percent, respectively and would not cause or contribute to a NAAQS violation.

Table 4.2-6 Maximum Monthly Construction Emission Rates – Alternative 1

EMISSIONS CATEGORY	MAXIMUM MONTHLY EMISSIONS (TONS/MO)					
	VOC	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2
Construction Equipment Exhaust	0.53	2.79	7.73	0.25	0.23	0.04
Temporary Ground Disturbance	0	0	0	4.08	0.85	0
Employee Commuting	0.01	0.09	0.01	0.0004	0.0004	0.0001
Concrete Truck Transportation	0.02	0.07	0.20	0.0099	0.0085	0.0003
TOTAL	0.55	2.94	7.94	4.33	1.08	0.04
MCAQD Inventory (ton/mo)	21,963	109,950	9,139	4,012	1,126	151
TOTAL as % of MCAQD Inventory	0.003%	0.003%	0.087%	0.11%	0.10%	0.028%

Notes: VOC and CO emission inventory figures based on 2005 MCAQD Inventory Report (MCAQD 2005)
PM_{10}, SO_2 and NOx emission inventory figures based on 2008 MCAQD Inventory Report (MCAQD 2008)
MCAQD ton/mo figures based on dividing annual rate in MCAQD Inventory Reports by 12

The total construction monthly and annual emission rates would be identical to that of the Proposed Action. Post-construction operational emissions would also be identical to that calculated for the Proposed Action.

Other Impacts

Under this alternative, there would be a change in management of lands managed by the BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor could result in additional projects that would likely have additional emissions and thus air quality and GHG impacts. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to air quality and climate change.

Operations, Maintenance, and Decommissioning

Residual Wind Erosion Fugitive Emissions

Post-construction operational PM_{10} and $PM_{2.5}$ emissions would be identical to those from the Proposed Action as shown in **Table 4.2-4**. The emissions estimation methodology is identical to that for the Proposed Action.

Residual Vehicular Exhaust Emissions

Post-construction operational vehicle emissions from employee commuter vehicle exhaust (tailpipe emissions) would be identical to those from the Proposed Action as shown in **Table 4.2-5**, and the calculation methodology and vehicle mix assumed is identical to that used for the Proposed Action.

4.2.3.4 Alternative 2: ROW South of SR 74

Construction

Ground Disturbance/Earthmoving Emissions

Particulate impacts would be essentially the same, just slightly lower than the Proposed Action due to a slightly smaller disturbed acreage in the access roads and transmission structure sites. The calculation methodology and impact assessment are identical to that used for the Proposed Action. At levels of maximum construction activity, the emission increase of PM_{10} and $PM_{2.5}$ in the PM_{10} non-attainment area would be 0.11 percent and 0.10 percent, respectively and would not cause or contribute to a NAAQS violation. The total construction monthly and annual emission rates would be identical to that of the Proposed Action. Post-construction operational emissions would also be identical to that calculated for the Proposed Action.

Concrete Truck Transport Emissions

Emissions from concrete truck transportation exhaust would be similar to those from the Proposed Action, and the calculation methodology is identical to that of the Proposed Action.

Employee Commuter Vehicle Emissions

Emissions from employee commuter vehicle exhaust (tailpipe emissions) would be similar to those from the Proposed Action and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

Total Emissions Impact Summary for Construction Activities

Emissions from each activity category were calculated and summed on a ton per month basis. A summary of the total maximum monthly emissions (worst-case ton/month emission rate) for criteria pollutants and the corresponding MCAQD emission inventory amounts is shown in **Table 4.2-7**.

Particulate Impacts

Particulate impacts would be identical to the Proposed Action and are due to construction equipment exhaust, concrete truck transport exhaust, employee vehicle exhaust and ground disturbance/earthmoving activities. The calculation methodology and impact assessment are identical to those for the Proposed Action. As shown in **Table 4.2-7**, at levels of maximum construction activity, the emission increase of PM_{10} and $PM_{2.5}$ in the PM_{10} non-attainment area would be 0.11 percent and 0.10 percent, respectively and would not cause or contribute to NAAQS violations. The total construction monthly and annual emission rates would be identical to that of the Proposed Action. Post-construction operational emissions would also be identical to that calculated for the Proposed Action.

Table 4.2-7 Maximum Monthly Construction Emission Rates – Alternative 2

EMISSIONS CATEGORY	MAXIMUM MONTHLY EMISSIONS (TONS/MONTH)					
	VOC	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2
Construction Equipment Exhaust	0.53	2.79	7.73	0.25	0.23	0.04
Temporary Ground Disturbance	0	0	0	3.99	0.83	0
Employee Commuting	0.01	0.09	0.01	0.0004	0.0004	0.0001
Concrete Truck Transportation	0.02	0.07	0.20	0.0099	0.0085	0.0003
TOTAL	0.55	2.94	7.94	4.25	1.07	0.04
MCAQD Inventory (ton/mo)	21,963	109,950	9,139	4,012	1,126	151
TOTAL as % of MCAQD Inventory	0.003%	0.003%	0.087%	0.11%	0.10%	0.028%

Notes: VOC and CO emission inventory figures based on 2005 MCAQD Inventory Report (MCAQD 2005)
PM_{10}, SO_2 and NOx emission inventory figures based on 2008 MCAQD Inventory Report (MCAQD 2008)
MCAQD ton/mo figures based on dividing annual rate in MCAQD Inventory Reports by 12

Other Impacts

Under this alternative, there would be a change in management of lands managed by the BLM, south of SR 74. Co-location of future utilities within the proposed additional corridor could result in additional projects that would likely have additional emissions and thus air quality and GHG impacts. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to air quality and climate change.

Operations, Maintenance, and Decommissioning

Residual Wind Erosion Fugitive Emissions

Post-construction emission estimates for PM_{10} and $PM_{2.5}$, due to wind erosion for each year after the conclusion of construction are shown in the **Table 4.2-8**.

Table 4.2-8 Wind Erosion Emissions (TONS/YR) – Alternative 2

	YEAR 1	YEAR 2	YEAR 3	YEAR 4
PM_{10}	1.5	0.8	0.4	0.2
$PM_{2.5}$	0.3	0.2	0.1	0.04

The wind erosion emission rates are very similar to the Proposed Action and would be about 0.1 tons lower for PM_{10} in Year 1 (1.5 ton/yr compared to 1.6 ton/yr from the Proposed Action).

Residual Vehicular Exhaust Emissions

Post-construction operational vehicle emissions from employee commuter vehicle exhaust (tailpipe emissions) would be identical to those from the Proposed Action as shown in **Table 4.2-5**, and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

4.2.3.5 Alternative 3: Carefree Highway Route

Construction

Ground Disturbance/Earthmoving Emissions

Emissions from ground disturbance and earthmoving activities would be similar to those from the Proposed Action, with the maximum $PM_{10}/PM_{2.5}$ ton/month emission rate due to temporary disturbances at 4.08 and 0.85 tons/month, respectively. The emissions calculation methodology is identical to that used for the Proposed Action.

Concrete Truck Transport Emissions

Emissions from concrete truck transportation exhaust would be similar to those from the Proposed Action, and the calculation methodology is identical to that described in the Proposed Action.

Employee Commuter Vehicle Emissions

Emissions from employee commuter vehicle exhaust (tailpipe emissions) would be similar to those from the Proposed Action, and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

Total Emissions Impact Summary for Construction Activities

Emissions from each activity category were calculated and summed on a ton per month basis. A summary of the total maximum monthly emissions (worst-case ton/month emission rate) for criteria pollutants and the corresponding MCAQD emission inventory amounts is shown in **Table 4.2-9**.

Particulate Impacts

Particulate impacts would be identical to the Proposed Action and are due to construction equipment exhaust, concrete truck transport exhaust, employee vehicle exhaust and ground disturbance/earthmoving activities. The calculation methodology and impact assessment are identical to that used for the Proposed Action. As shown in the preceding table, at levels of maximum construction activity, the emission increase of PM_{10} and $PM_{2.5}$ in the PM_{10} non-attainment area would be 0.11 percent and 0.10 percent, respectively and would not cause or contribute to a NAAQS violation. The total construction monthly and annual emission rates would be identical to that of the Proposed Action. Post-construction operational emissions would also be identical to that calculated for the Proposed Action.

Table 4.2-9 Maximum Monthly Construction Emission Rates – Alternative 3

EMISSIONS CATEGORY	MAXIMUM MONTHLY EMISSIONS (TONS/MO)					
	VOC	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2
Construction Equipment Exhaust	0.53	2.79	7.73	0.25	0.23	0.04
Temporary Ground Disturbance	0	0	0	4.08	0.85	0
Employee Commuting	0.01	0.09	0.01	0.0004	0.0004	0.0001
Concrete Truck Transportation	0.02	0.07	0.20	0.0099	0.0085	0.0003
TOTAL	0.55	2.94	7.94	4.33	1.08	0.04
MCAQD Inventory (ton/mo)	21,963	109,950	9,139	4,012	1,126	151
TOTAL as % of MCAQD Inventory	0.003%	0.003%	0.087%	0.11%	0.10%	0.028%

Notes: VOC and CO emission inventory figures based on 2005 MCAQD Inventory Report (MCAQD 2005)
PM_{10}, SO_2 and NOx emission inventory figures based on 2008 MCAQD Inventory Report (MCAQD 2008)
MCAQD ton/mo figures based on dividing annual rate in MCAQD Inventory Reports by 12

Operations, Maintenance, and Decommissioning

Residual Wind Erosion Fugitive Emissions

Post-construction emission estimates for PM_{10} and $PM_{2.5}$ due to wind erosion for each year after the conclusion of construction are identical to Alternative 3, and are shown in **Table 4.2-10**.

Table 4.2-10 Wind Erosion Emissions (TONS/YR) – Alternative 3

	YEAR 1	YEAR 2	YEAR 3	YEAR 4
PM_{10}	1.5	0.8	0.4	0.2
$PM_{2.5}$	0.3	0.2	0.1	0.04

The wind erosion emission rates are very similar to the Proposed Action and would be about 0.1 tons lower for PM_{10} in Year 1 (1.5 ton/yr compared to 1.6 ton/yr from the Proposed Action).

Residual Vehicular Exhaust Emissions

Post-construction operational vehicle emissions from employee commuter vehicle exhaust (tailpipe emissions) would be identical to those from the Proposed Action as shown in **Table 4.2-5**, and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

4.2.3.6 State Trust Land Route Variation Sub-alternative

Construction

Construction Equipment Exhaust Emissions - Emissions from construction equipment exhaust would be similar to those from the Proposed Action, and the calculation methodology is identical to that of the Proposed Action.

Ground Disturbance/Earthmoving Emissions - Emissions from ground disturbance and earthmoving activities would be identical to those from the Proposed Action, and the emissions calculation methodology is identical to that of the Proposed Action.

Concrete Truck Transport Emissions - Emissions from concrete truck transportation exhaust would be similar to those from the Proposed Action, and the calculation methodology is identical to that of the Proposed Action.

Employee Commuter Vehicle Emissions - Emissions from employee commuter vehicle exhaust (tailpipe emissions) would be similar to those from the Proposed Action, and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

Total Emissions Impact Summary for Construction Activities - Emissions from each activity category were calculated and summed on a ton per month basis. A summary of the total maximum monthly emissions (worst-case ton/month emission rate) for criteria pollutants and the corresponding MCAQD emission inventory amounts is shown in **Table 4.2-11**.

Particulate Impacts - Particulate impacts would be identical to the Proposed Action and are due to construction equipment exhaust, concrete truck transport exhaust, employee vehicle exhaust, and ground disturbance/earthmoving activities. The calculation methodology and impact assessment are identical to that of the Proposed Action. As shown in **Table 4.2-11**, at levels of maximum construction activity, the emission increase of PM_{10} and $PM_{2.5}$ in the PM_{10} non-attainment area would be 0.11 percent and 0.10 percent, respectively and would not cause or contribute to NAAQS violations. The total construction monthly and annual emission rates would be identical to that of the Proposed Action. Post-construction operational emissions would also be identical to that calculated for the Proposed Action.

Table 4.2-11 Maximum Monthly Construction Emission Rates – State Trust Land Route Variation Sub-Alternative

EMISSIONS CATEGORY	MAXIMUM MONTHLY EMISSIONS (TONS/MONTH)					
	VOC	CO	NO_X	PM_{10}	$PM_{2.5}$	SO_2
Construction Equipment Exhaust	0.53	2.79	7.73	0.25	0.23	0.04
Temporary Ground Disturbance	0	0	0	4.08	0.85	0
Employee Commuting	0.01	0.09	0.01	0.0004	0.0004	0.0001
Concrete Truck Transportation	0.02	0.07	0.20	0.0099	0.0085	0.0003
TOTAL	0.55	2.94	7.94	4.33	1.08	0.04
MCAQD Inventory (ton/mo)	21,963	109,950	9,139	4,012	1,126	151
TOTAL as % of MCAQD Inventory	0.003%	0.003%	0.087%	0.11%	0.10%	0.028%

Notes: VOC and CO emission inventory figures based on 2005 MCAQD Inventory Report (MCAQD 2005)
PM_{10}, SO_2 and NOx emission inventory figures based on 2008 MCAQD Inventory Report (MCAQD 2008)
MCAQD ton/mo figures based on dividing annual rate in MCAQD Inventory Reports by 12

Operations, Maintenance, and Decommissioning

Residual Wind Erosion Fugitive Emissions - Post-construction operational PM_{10} and $PM_{2.5}$ emissions would be identical to those from the Proposed Action as shown in **Table 4.2-4**. The emissions estimation methodology is identical to that of the Proposed Action.

Residual Vehicular Exhaust Emissions - Post-construction operational vehicle emissions from employee commuter vehicle exhaust (tailpipe emissions) would be identical to those from the Proposed Action as shown in **Table 4.2-5**, and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

Primary Segment Common to All Action Alternatives

Impacts for this Primary Segment would be identical to those from the Proposed Action.

4.2.3.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives.

The No Action Alternative would result in no air quality impacts from construction activities and post-construction operational survey and maintenance activities that would have occurred in conjunction with the Proposed Action or Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed lands. Under this situation, impacts to air quality could be similar to those described for the Proposed Action and Action Alternatives. Should the route be longer

or shorter than the Proposed Action or Action Alternatives (resulting in different amounts of ground disturbance and generated emissions), adverse impacts may be increased or decreased.

Air quality impacts to the area could arise from any future projects or alternative uses of the land. It should be noted that if the Project is not built, the area that would have been served by the transmission line could instead become more reliant on "distributed power generation" which utilizes locally generated power in order to meet growing power demand. Localized power generation would involve the use of smaller generators (e.g. gas turbine or diesel generators) to satisfy power demand which could result in ambient air quality impacts and climate change impacts.

4.2.4 Mitigation and Residual Effects

Control of Construction Related Fugitive Particulate Emissions

Maricopa County Air Pollution Control Rule 310 requires any earthmoving project that disturbs greater than one-tenth (0.1) of an acre to obtain a dust control permit from the MCAQD and to have a Dust Control Plan detailing dust control measures for the project and contingency measures. Additionally, for any site requiring a dust control permit, all water truck and water-pull drivers must have successfully completed the Maricopa County Basic Dust Control Training Class within the last three years.

For project sites greater than one-tenth of an acre, additional requirements apply as follows: For projects disturbing greater than one acre, the soil texture of the site must be identified, either by a soil assessment report or by Appendix F (Soil Designations) of Maricopa County Air Pollution Control Rules, and the site superintendant is required to have completed the Basic Dust Control Training Class within the last three years (County Rule 310 Sec. 309). For project sites of two acres or larger (or sites where 100 cubic yards/day of bulk material is hauled on/off), a trackout control device is required at all exits. For project sites of five acres or greater, an on-site Dust Control Coordinator is required and must have successfully completed the Maricopa County Comprehensive Dust Control Training Class within the last three years. Additionally, for sites 5 acres or larger, a project information sign must be posted in accordance with Rule 310 Section 308 requirements. The sign must include the MCAQD complaint number allowing the public to report dust related complaints.

Maricopa County Rule 310 limits fugitive dust visible emissions to no more than 20 percent opacity and requires extensive monitoring of earthmoving activities to ensure compliance with this limit and all applicable requirements. Additionally, Maricopa County Rule 310.01 specifies requirements for open areas and vacant lots. Such areas would possibly be a source of particulate emissions during both the construction phase and post-construction operational phase. Section 302.5 of the rule specifies that the owner of open land areas or vacant lots must not allow any particulate matter visible emissions beyond the property line and also requires implementation of control measures, such as establishment of vegetative ground cover, application of palliatives, or other control measures approved by the county to minimize windblown dust emission. The rule also requires periodic evaluation and measurements of soil stability and surface conditions to ensure the effectiveness of control measures.

A variety of fugitive dust control measures are available to minimize fugitive dust emissions which include:

- Frequent watering to maintain visible moisture and/or form soil crust (stabilization)
- Treatment of actively disturbed areas with dust palliatives
- Trackout control devices such as grizzly bars, wheel washers, gravel pads located at all entrances and exits
- Utilize street sweepers to remove any visible soil/mud/dirt carried onto paved access roads
- Limiting vehicle speeds on access roads to less than 15 mph
- Covering haul truck cargo beds with tarps and maintain 3 inches of freeboard
- Cessation of construction on high-wind event days, and/or during periods of adverse meteorological conditions which could cause or contribute to NAAQS violations
- Revegetation to stabilize soil
- Minimization of disturbed land areas to the extent practicable with project design considerations
- Maintain a visible crust and sufficient moisture on any storage piles
- During the post-construction operational phase apply dust suppression measures such as watering (to form crust), application of dust palliatives, or gravel on vacant lots and disturbed areas in accordance with Maricopa County Rule 310.01

Minimization of Emissions from Mobile Sources and Construction Equipment

Emissions from mobile and construction equipment are due primarily to combustion of diesel fuel in engines. Ultra-low sulfur diesel fuel, limited to 15 ppm sulfur is now in widespread use in Arizona and is virtually the only type of diesel fuel available for use in both on-road and non-road construction vehicles in the United States. Use of ultra-low sulfur diesel fuel drastically reduces SO_2 emissions and would serve to mitigate the associated secondary fine particulate emissions (of which SO_2 is a precursor), thereby lessening overall particulate impacts. Use of ultra-low sulfur diesel also results in lower NO_x emissions. Additional mitigation measures for mobile sources and construction equipment include the following:

- Construction related trips of workers and equipment would be minimized
- Idling of heavy equipment would be minimized
- Manufacturer recommendations for engine maintenance and operation would be followed to optimize emission performance
- Newer equipment meeting the most stringent of applicable federal or state standards would be utilized as much as practicable
- Diesel engines, motors and equipment would be located as far as practicable from residential areas and other sensitive areas (i.e., schools, daycare centers, and hospitals).

Since the majority of adverse impacts related to air resources would be temporary, following mitigation, residual effects are expected to be minimal.

4.2.5 Unavoidable Adverse Impacts

The Project would result in temporary air quality impacts from fugitive dust due to ground disturbance activities, and from engine exhaust. There would be some limited long-term air quality impacts due to emission from surveying and maintenance activities previously described.

4.3 CULTURAL RESOURCES

4.3.1 Indicators and Methods

The term "historic property" is defined in the NHPA as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places (National Register)”; such term includes artifacts, records, and remains which are related to such district, site, building, structure, or object. 16 USC Section 470(w)(5).

The following indicators were considered when analyzing potential impacts to historic properties (i.e., National Register-eligible cultural resources):

- The number of National Register-eligible sites potentially impacted
- The number of historic properties within the viewshed potentially impacted indirectly by the Project

Assessment of potential effects or impacts on cultural resources is based on the NHPA regulations that define an effect as a direct or indirect alteration to the characteristics of a “historic property” that qualify it for inclusion in the National Register. Adverse effects diminish the integrity of a property’s location, setting, design, materials, workmanship, feeling, or association.

As defined in 36 CFR 800.5, adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary’s Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;

(iii) Removal of the property from its historic location;

(iv) Change of the character of the property’s use or of physical features within the property’s setting that contribute to its historic significance;

(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property’s significant historic features;

(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

(vii) Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

BLM, in consultation with the SHPO, ASLD, tribes, and other consulting parties, will apply the above criteria of adverse effect to arrive at a determination of effect for the entire proposed undertaking. BLM shall also to the extent practicable ensure that adverse effects to historic properties are avoided through project design, redesign, or relocation of facilities where feasible. Until final project designs are developed and approved, it must be assumed that the Project could adversely affect one or more of the historic properties, leading to a determination of adverse effect. The BLM would continue to work with the consulting parties to develop modifications or measures to avoid, minimize, or mitigate adverse effects to historic properties. Such consultation would result in the development and implementation of a Memorandum of Agreement (MOA) containing the terms and conditions agreed upon to resolve the adverse effects.

4.3.2 Direct and Indirect Effects by Alternative

4.3.2.1 Proposed Action

Construction

Prehistoric and historic sites eligible for listing in the National Register are distributed throughout the Project Area. Direct impacts to prehistoric and historic sites, including surface or subsurface disturbance incurred during Project construction could occur anywhere along the Proposed Action. Activities such as access road improvements; transmission line construction, including foundations, structure pads, and guy wire anchor points; vegetation management; and material yards for construction equipment and personnel have the potential to disturb cultural resources during the construction phase.

All sites would be avoided where practicable by Project design, such as locating transmission towers, access routes, and other facilities outside site boundaries; or by using helicopters for construction in sensitive areas. If avoidance is not feasible due to technical issues or resource conflicts, BLM would develop a MOA to address the adverse effect. Regardless of whether a MOA is required, BLM and ASLD would work with APS to develop a Discovery Plan, and if warranted a Monitoring Plan, which would define procedures for evaluating and treating discoveries of unrecorded cultural resources or recognition of unanticipated adverse effects. If any unanticipated cultural resources discoveries occur, all work within 50 meters of the boundary of the discovery would cease immediately and the BLM Field Manager would be notified. If the discovery occurs on State Trust land, the appropriate official at ASLD would be immediately notified. The BLM or ASLD would then evaluate the discovery in coordination with other consulting parties in order to determine and implement appropriate treatment. These actions would follow the provisions of a Monitoring and Discovery Plan developed in accordance with the terms of the MOA.

Nine National Register-eligible cultural resource sites (i.e., historic properties) are known to be within the Proposed Action ROW route (**Table 3.3-1**). These include three historic sites (US 60/70/89 [AZ V:2:101(ASM), AZ C:2:174(ASM), AZ I:3:10(ASM)], Santa Fe, Prescott & Phoenix Railway [AZ N:3:32(ASM)], and the Beardsley Canal [AZ T:3:55(ASM)]), four prehistoric sites (AZ T:3:10(ASM), AZ T:3:11(ASM), AZ T:3:325(ASM), and AZ T:3:348(ASM)), and two multi-component sites (AZ T:3:350(ASM) and AZ T:3:351(ASM)). The greatest challenge for avoiding impacts on National Register eligible properties is along the east side of the Agua Fria River. Transmission line structure placement would be modified to avoid and span National Register-eligible sites where possible. Direct adverse impacts could potentially be avoided through construction design modification or mitigated through data recovery studies. Impacts would likely be minor to moderate and long-term.

Operations, Maintenance, and Decommissioning

No additional direct impacts to National Register-eligible cultural resources from operations, maintenance, and decommissioning would be anticipated.

Procedures would be implemented, as warranted, to ensure that if any National Register-eligible properties in the ROW are designated for avoidance by construction activities, that they would not be inadvertently damaged during operation, maintenance, and decommissioning of the Project. If BLM and ASLD conclude that National Register-eligible properties might be threatened, BLM and ASLD would work with APS to implement measures to avoid adverse impacts. BLM and/or ASLD staff, perhaps assisted by Arizona Site Stewards program volunteers, would conduct long-term monitoring as warranted. Long-term monitoring on privately owned land would be at the discretion of the land owner.

Indirect visual impacts to the settings of historic properties were evaluated in relation to the applicable National Register criteria and current integrity of setting, as well as the distance and visibility of proposed facilities (**Table 4.3-1**).

The Beardsley Canal (AZ T:3:55(ASM)) is eligible for the National Register under Criterion A (association with significant historical events). The linear site extends through areas that have been extensively developed (in the southern portion of the APE - which is an approximately 3 to 5 mile buffer area from the route) and less developed (on the north end of the site) with visual intrusions from power lines, roads (including SR 74 and Highway 303), residential development, the Canyon Raceway, Morgan and Raceway Substations, and the Pleasant Valley Airport. The CAP canal is crossed by the site as well. The Proposed Action would cross the Beardsley Canal (AZ T:3:55(ASM)) and therefore be visible in the foreground, middle ground, and background. Due to the numerous developed facilities in the area, there would be minor additional impacts to the Beardsley Canal's integrity of setting. Further, since the setting of this historic property is not essential to understanding its significance, the introduction of a new feature in that setting would not diminish the characteristics that make it eligible for the National Register.

The Calderwood Butte Archaeological District is recommended eligible for the National Register under Criterion D (potential to yield important information). Although designated as a preserve, housing developments have encroached on the southern and eastern sides of the butte. The Agua Fria Recharge Station, Beardsley Canal, the CAP canal, and other industrial developments are present in the foreground. At its closest point, the Proposed Action would

be 4.0 miles from this site and therefore would be visible in the middle ground. There would be minor impacts to the Calderwood Butte Archaeological District's integrity of setting. However, since the setting of this historic property is not essential to its significance, the introduction of a new feature in the middle ground would not diminish the characteristics that make it eligible for the National Register.

The Morristown Store (#91001003) is listed on the National Register under Criterion A (association with significant historical events). The property is adjacent to SR 74. There is an existing 69kV transmission line, a modern post office, and the Morristown Elementary School near the Morristown Store, as well as some residential development. The Proposed Action route would be 3.8 miles from the Morristown Store so would be visible in the middle ground. There would be minor impacts to the Morristown Store's integrity of setting. Since the setting of this historic property is not essential to understanding its significance, the introduction of a new feature in the middle ground would not diminish the characteristics that make it eligible for the National Register.

The Santa Fe, Prescott, & Phoenix Railway (AZ N:3:32(ASM)) is eligible for the National Register under Criterion A (association with significant historical events). The site is linear and extends through areas that have been extensively developed on the southeast and less developed on the northwest with visual intrusions from modern developments such as SR 74, US 60, Wittmann, Circle City, Morristown, Cactus Ranch Trailer Park, Chrysler Proving Ground, the CAP canal, LAFB, Speedworld Raceway Park, and miscellaneous residential development (Desert Oasis, etc.). The Proposed Action would cross the railway and therefore be visible in the foreground, middle ground, and background. There would be negligible impacts to the Santa Fe, Prescott, & Phoenix Railway’s integrity of setting. However, since the setting of this historic property is not essential to understanding its significance, the introduction of a new feature would not diminish the characteristics that make it eligible for the National Register.

The Seymour III site (AZ T:2:27(ASM)), the remnants of a historic mining town, is eligible for the National Register under Criterion D (potential to yield important information). It has a well used two-track road running generally east-west through it to access the west side of the Hassayampa River. There is some residential development to the east on the opposite side of the river, but generally the area is undeveloped. At its closest point, the Proposed Action would be 4.3 miles from this site and therefore would be visible in the middle ground. There would be negligible impacts to the Seymour III site's integrity of setting. However, since the setting of this historic property is not essential to its significance, the introduction of a new feature in the middle ground would not diminish the characteristics that make it eligible for the National Register.

The Surly site (AZ T:4:13(ASM)) is the remnants of a small Hohokam irrigation system that used water from the western channel of New River; it is eligible for the National Register under Criterion D (potential to yield important information). There is a bladed dirt road as well as numerous two-tracks and trails through the site. Residential development is encroaching to the southeast and south, currently appearing in the middle ground and background. Other developments include the New River Dam and the Hayden Rhodes Aqueduct built to the north. The Proposed Action would be about 3.2 miles from the site at its closet point so would be visible in the middle ground. There would be negligible impacts

to the Surly site's integrity of setting. However, since the setting of this historic property is not essential to its significance, the introduction of a new feature in the middle ground would not diminish the characteristics that make it eligible for the National Register.

Table 4.3-1 Visual Impacts

SITE NAME AND/OR NUMBER	NATIONAL REGISTER ELIGIBILITY	TRANSMISSION LINE LOCATION	DISTANCE (MILES) TO ALTERNATIVE AT CLOSEST POINT			VISUAL IMPACT TO SETTING
			P.A./ ALT1	ALT 2	ALT 3	
Santa Fe, Prescott & Phoenix Railway AZ N:3:32(ASM)	Eligible, Criterion A	Foreground, Middle ground, Background	0	0	0	Negligible
Seymour III AZ T:2:27(ASM)	Recommended eligible, presumably Criterion D	Middle ground	4.3*	4.3*	4.3*	Negligible
Beardsley Canal AZ T:3:55(ASM)	Eligible, Criterion A	Foreground, Middle ground, Background	0	0	0	Minor
Surly Site AZ T:4:13(ASM)	Eligible, Criterion D	Middle ground	3.2	3.2	3.1	Negligible
Morristown Store (#91001003)	Listed 1991, Criterion A	Middle ground	3.8*	3.8*	3.8*	Minor
Calderwood Butte Archaeological District	Recommended eligible, Criterion D	Middle ground	4.0	4.0	2.9	Minor

Note: Unless specifically noted; impacts would be the same under the State Trust Land Route Variation Sub-alternative.*Under the State Trust Land Route Variation Sub-alternative, the distance would be 5.7 miles to the Seymour III site and 4.4 miles to the Morristown Store, both an increase in distance.

In summary, indirect impacts to visually sensitive National Register eligible cultural resource sites would be negligible to minor and long-term under the Proposed Action.

Native American Consultation and Concerns

Various Tribes have been consulted and informed of the Project; however, no specific concerns have been raised to date by these various tribes regarding any religious site, sacred site, or traditional cultural property. However, Tribes have expressed interest and concern about potential effects to archaeological sites that are within their traditional territories and may have been inhabited or used by their ancestors. As Native American concerns emerge through consultation, BLM would consult with the appropriate Tribe(s) and individuals to obtain information about those concerns, the importance of the resource, and what mitigation

measures might be appropriate, such that BLM can determine an appropriate course of action taking that information into account.

4.3.2.2 Alternative 1: Proposed Action with Additional Corridor

Construction

Impacts to cultural resources during construction of the Project would be the same as the Proposed Action.

Operations, Maintenance, and Decommissioning

Direct and indirect impacts to cultural resources during operations, maintenance, and decommissioning would be similar to those described under the Proposed Action. In addition, under this alternative, there would be a change in management of lands managed by the BLM. Co-location of future utilities within the proposed corridor could impact National Register eligible cultural resource sites located on these lands. However, any future projects would be subject to NEPA, Section 106 of the NHPA, and other environmental review, therefore avoidance or mitigation would reduce impacts to cultural resources.

Native American Consultation and Concerns

Impacts would be similar to those of the Proposed Action.

4.3.2.3 Alternative 2: ROW South of SR 74

Construction

Eight National Register-eligible cultural resource sites are known to be within the Alternative 2 route (**Table 3.3-1**), the same sites as the Proposed Action, with the exception of AZ T:3:348(ASM) which is located north of SR 74. Impacts to cultural resources during construction of the Project would be the same as the Proposed Action.

Operations, Maintenance, and Decommissioning

Direct and indirect impacts to cultural resources during operations, maintenance, and decommissioning would be similar to those described under the Proposed Action.

Native American Consultation and Concerns

Impacts would be similar to those of the Proposed Action.

4.3.2.4 Alternative 3: Carefree Highway Route

Construction

Six National Register-eligible cultural resource sites are known to be within the Alternative 3 route (**Table 3.3-1**); three historic sites (Santa Fe, Prescott & Phoenix Railway [AZ N:3:32(ASM)], US 60/70/89 [AZ V:2:101(ASM), AZ C:2:174(ASM), AZ I:3:10(ASM)], and the Beardsley Canal [AZ T:3:55(ASM)]) and three prehistoric sites (AZ T:3:19(ASM), AZ T:3:20(ASM), and AZ T:3:21(ASM)). Impacts to cultural resources during construction of the Project would be similar to the Proposed Action.

Operations, Maintenance, and Decommissioning

Direct and indirect impacts to cultural resources during operations, maintenance, and decommissioning would be similar to those described under the Proposed Action. The Project would be 2.9 miles from the Calderwood Butte Archaeological District, closer than the Proposed Action but still within the middle ground, a long-term and minor indirect impact.

Native American Consultation and Concerns

Impacts would be similar to those of the Proposed Action.

4.3.2.5 State Trust Land Route Variation Sub-alternative

Sub-alternative

Construction

No Project-specific survey has been conducted along the Sub-alternative, however, there is one known historic site, AZ T:2:144(ASM), located along the route variation that is not eligible for the National Register (**Table 3.3-1**). A cultural resource inventory would be required prior to construction activities if this Sub-alternative were selected. It seems likely that cultural resources along the State Trust Land Route Variation Sub-alternative would be similar to those along the nearby originally proposed alignment, the Primary Segment Sub-alternative.

Operations, Maintenance, and Decommissioning

Indirect visual impacts would be the same as the Proposed Action for the Beardsley Canal (AZ T:3:55(ASM)), Calderwood Butte Archaeological District, Santa Fe, Prescott, & Phoenix Railway (AZ N:3:32(ASM)), and the Surley Site (AZ T:4:13(ASM)) (**Table 4.3-1**). Distance to the Seymour III site (AZ T:2:27(ASM)) would increase to 5.7 miles; the Project would be visible in the background rather than middle ground. Distance to the Morristown Store (#91001003) would increase to 4.4 miles, still within the middle ground. Impacts to cultural resources during operations, maintenance, and decommissioning would be similar to those described under the Proposed Action.

Native American Consultation Concerns

Impacts would be similar to those of the Proposed Action.

Primary Segment Common to All Action Alternatives

Construction

Three archaeological sites have been recorded along the Primary Segment Sub-alternative Route. All three of those sites, AZ T:3:145, 146, and 147(ASM), are scatters of trash (dating from approximately the 1920s to 1950s) that were evaluated as not eligible for the National Register. There would be no impacts to National Register-eligible cultural resource sites under the Primary Segment Sub-alternative.

Operations, Maintenance, and Decommissioning

Direct and indirect impacts to cultural resources during operations, maintenance, and decommissioning would be similar to those described under the Proposed Action.

Native American Consultation Concerns

Impacts would be similar to those of the Proposed Action.

4.3.2.6 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on National Register-eligible cultural resource sites (historic properties) or historic resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed lands. Under this situation, impacts to cultural resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to cultural resources and the magnitude of those impacts would depend on the route selected.

Native American Consultation and Concerns

Under the No Action Alternative, there would be no direct or indirect construction or operational impacts to known places of cultural and/or geographic interest to the Tribes related to the Proposed Action or Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed lands. Under this situation, impacts to known places of cultural and/or geographic interest to the Tribes located on lands that are crossed or in the vicinity of the project could occur. The degree of potential for impacts and the magnitude of those impacts would depend on the route selected.

4.3.3 Mitigation and Residual Effects

Avoidance/protection: APS will implement actions to ensure that historic properties that are avoided by Project design or redesign are not impacted during construction, operation, or maintenance activities. Such actions are subject to agency approval and may include, as appropriate, temporarily placing barriers or marking areas to be avoided during construction; monitoring by a professional archaeologist during construction; and/or placing locked gates to restrict public access to transmission line access roads that may increase the potential for indirect impacts. BLM and/or ASLD staff, possibly assisted by Arizona Site Steward Program volunteers, would monitor and document the condition of National Register-eligible properties within the ROW as warranted.

Under the Proposed Action, Alternative 1, or Alternative 2, spanning the historic properties near the Agua Fria River may not be possible; therefore a supplemental Class III cultural resource survey (Rogge and Kirvan 2013), located within the ACC corridor, was conducted so that options for avoiding impacts by shifting the alignment to the east could be considered. The recently inventoried potential alignment shift (Rogge and Kirvan 2013) would avoid

disturbance of all the National Register eligible sites between the river and the Morgan Substation. Four sites are present along the potential alignment shift (**Table 4.3-2**), all eligible for the National Register. The alignment shift could easily span the one newly recorded small site (AZ T:3:358(ASM)), the Beardsley Canal (AZ T:3:55(ASM)), as well as the edges of two larger sites (AZ T:3:350(ASM) and AZ T:3:351(ASM)).

Table 4.3-2 Known Cultural Resource Sites along Potential Alignment Shift

SITE NUMBER / NAME	SITE TYPE	NATIONAL REGISTER STATUS
Beardsley Canal AZ T:3:55(ASM)	Historic irrigation canal	Eligible, Criterion A
AZ T:3:350(ASM) SVM-16	Prehistoric artifact scatter and historic rock features with artifact scatter	Eligible, Criterion D
AZ T:3:351(ASM) SVM-17	Prehistoric and historic artifact scatters	Eligible, Criterion D
AZ T:3:358(ASM) SVM-20	Hohokam petroglyph with flaked stone and rock features	Eligible, Criterion D

Mitigation through a data recovery program: Scientific data recovery may be implemented to mitigate impacts to historic properties that cannot be avoided. Procedures for scientific investigations, reporting, and long-term preservation of data and collections would be specified in a Historic Properties Treatment Plan implemented in accordance with the terms of the MOA.

Mitigation of visual impacts: The impact analysis indicates negligible to minor impacts to the setting of historic properties within five miles of the Action Alternatives. Impacts could be reduced by selecting transmission line structures or facility designs and shades that would lessen visual contrast.

Following the implementation of the mitigation measures, potential residual effects to cultural resources should be greatly reduced, although the potential for residual effects could still occur through providing additional access routes into previously undisturbed areas.

4.3.4 Unavoidable Adverse Impacts

Unavoidable impacts to National Register-eligible cultural resource sites could include compromised site integrity and loss of data due to physical damage to the sites. Impacts would be mitigated to the extent possible through data recovery or other appropriate treatment prior to any construction activities through an approved treatment plan. The presence of upgraded public access roads could lead to increased casual visitation to nearby site locations resulting in greater vulnerability to site disturbance, unauthorized artifact collection, and vandalism.

4.4 GEOLOGY AND MINERALS

4.4.1 Indicators and Methods

The primary indicator for mineral resources is the mineral potential of the Study Area as established by a mineral potential report in accordance with Bureau policy and guidelines. In addition, active mining claims or other mineral authorizations such as leases or active mineral material sites within the Project Area disturbance footprint are indicators of mineral resources.

4.4.2 Direct and Indirect Effects by Alternative

4.4.2.1 Impacts Common to All Action Alternatives

The entire Study Area has been determined to have low potential for leasable minerals and no mineral leases have been issued by BLM within the Study Area. Areas outside of the Study Area to the southwest, south, and west have been identified with moderate potential for geothermal, oil and gas, and sodium resources and these areas would be expected to be explored and developed before any such activity would be proposed within the Study Area. As such, the Action Alternatives would have a negligible impact on leasable mineral resources.

If issuance of mineral leases were proposed after approval of and within a ROW and establishment of a utility corridor through an RMPA, those leases could be subject to lease stipulations and permit conditions of approval designed to protect use of the ROW for the purposes for which it was approved. Such stipulations and permit conditions of approval could reduce the area available for development of the leasable mineral by precluding operations near ROW structures or within the ROW. Those restrictions could also require the mineral lessee to modify lease operations, such as by relocation of access, structures, or operations sites, which could increase the cost of such operations. On the other hand, deposits of oil and gas, sodium and geothermal resources generally underlie areas of hundreds to thousands of acres or more. Directional drilling and mining methods can allow leaving undisturbed surface areas to protect ROW structures and the transmission line facilities. In the event that exploration, leasing, and development of leasable minerals were to occur within the Study Area, considering the relatively small acreage that would be disturbed by any of the Action Alternatives as compared with the extent of such deposits, the Action Alternatives would have a negligible impact on the exploration for and development of leasable mineral resources.

A small north-south trending drainage approximately 3 miles east of Morristown in the north central portion of the Study Area has potential for the occurrence of sand and gravel deposits. This deposit underlies all three Action Alternatives in a narrow north-south band in that area. Implementation of any of the Action Alternatives would reduce or preclude development of that portion of these sand and gravel deposits that underlie the ROW. However, because of the relatively small acreage of the portion of those deposits covered by the Action Alternatives, as compared to the overall size of the sand and gravel potential area, there would be a negligible impact on the ability to develop and mine the sand and gravel resource.

Impacts common to All Action Alternatives also include a portion of the transmission line route from the Sun Valley Substation to 179th Avenue. This section is approximately 25-miles long with a 200-foot wide ROW. Included in this section is a Saleable Mineral Restriction area for saleable minerals (**Figure 3.4-3**) along an approximate 2.2 mile section of the ROW near the Sun Valley Substation within which no saleable mineral authorizations could be approved by BLM. Management decisions in the 2010 Bradshaw-Harquahala RMP preclude BLM approval of saleable mineral activities on these lands. Since saleable minerals could not be developed on these lands, implementation of any of the Action Alternatives would have no impact on development of saleable mineral resources within the Mineral Restriction areas.

Construction

Construction activities for the transmission line could locally alter surface topography if large cut and/or fill earth moving work is needed to install the transmission line structures or construct access roads.

Operations, Maintenance, and Decommissioning

Access roads may actually increase accessibility to existing and any future authorized mining claims, geothermal leases and oil and gas leases. The anticipated level of impacts to geology and minerals from the operations and maintenance of the transmission facilities would be negligible.

4.4.2.2 Proposed Action

The Proposed Action route would be located on Quaternary surficial deposits, Tertiary sedimentary rocks, Tertiary volcanic rocks, Early Proterozoic metamorphic rocks, and Early Proterozoic metavolcanics.

Presently there are three active lode mining claims, or portions of claims, and one metallic mineral district including or adjacent to these claims, located within the Proposed Action. Active mining claims (subject to a determination by BLM that they are valid claims under the regulations) establish valid existing rights for access to the claim(s) and to explore for, develop and mine the applicable mineral commodity in accordance with BLM regulations. In addition, approval of a ROW does not preclude the location of mining claims within the ROW and the mining claim(s) would have superior rights to those granted under the ROW. However, no Notices or Plan of Operations to conduct exploration operations are currently approved or pending action by BLM for these claims. Since mining claims establish a valid existing right, future exploration, development, or mining operations on any of the three existing mining claims, or others that may be located within the Proposed Action if the ROW is approved, could conflict with transmission line structures or use of the ROW. The mining claim would have superior rights to the ROW which could result in impacts to the operation of the ROW including structures that could need to be removed, relocated and/or redesigned. Removal of transmission line structures could result in temporary interruptions or reductions in service of variable lengths of time for residential and commercial customers. ROW structure removal, relocation, and/or re-design would add costs to the Project and may require additional environmental review under NEPA, which would also add cost and delays to service. The cost of structure removal, relocation, re-design, and additional NEPA review,

as well as the amount of time of interruption, reduction or delays in service would depend on the nature and extent of the conflict with the mining claim operation.

Impacts to geology, leasable, and saleable mineral resources for the Proposed Action would be the same as described in **Section 4.4.2.1.** Based on the available data, the Project would not be expected to impact any existing mining activities.

Construction

Impacts to geology and mineral resources during construction activities would be the same as described in **Section 4.4.2.1**.

Operations, Maintenance, and Decommissioning

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

4.4.2.3 Alternative 1: Proposed Action with Additional Corridor

The Proposed Action route and the proposed additional corridor would be located on Tertiary volcanic rocks, Tertiary basaltic rocks, Early Proterozoic metamorphic rocks, and Early Proterozoic metavolcanics.

There are 12 active lode mining claims, or portions of claims, and one metallic mineral district including or adjacent to these claims, located within Alternative 1. Active mining claims (subject to a determination by BLM that they are valid claims under the regulations) establish valid existing rights for access to the claim(s) and to explore for, develop, and mine the applicable mineral commodity in accordance with BLM regulations. In addition, approval of a ROW does not preclude the location of mining claims within a ROW and the mining claim(s) would have superior rights to those granted under the ROW. However, no Notices or Plan of Operations to conduct exploration operations are currently approved or pending action by BLM for these claims. Since mining claims establish a valid existing right, future exploration, development, or mining operations on any of the 12 existing mining claims, or others that may be located within Alternative 1 if the ROW is approved, could conflict with transmission line structures or use of the ROW. The mining claim(s) would have superior rights to the ROW which could result in impacts to the operation of the ROW including removal of the transmission line structures that would need to be relocated and/or redesigned. Impacts related to the removal of transmission line structures would be the same as that for the Proposed Action.

Impacts to geology, leasable, and saleable mineral resources for Alternative 1 would be the same as described in **Section 4.4.2.1**.

Construction

Impacts to geology and mineral resources during construction of the Project would be the same as described in **Section 4.4.2.1**.

Operations, Maintenance, and Decommissioning

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

4.4.2.4 Alternative 2: ROW South of SR 74

The Alternative 2 ROW and additional corridor south of SR 74 would be located on Tertiary volcanic rocks, Tertiary basaltic rocks, Early Proterozoic metamorphic rocks, and Early Proterozoic metavolcanics.

Presently there is one sand and gravel site, one Active Lode Mining Claim and one Metallic Mineral District in the additional corridor area; however, there are no authorized metallic or nonmetallic mining claims; geothermal leases; or oil and gas leases present within 1,000 feet of the Alternative. The impacts to geology and minerals from the construction of the Proposed Action would be negligible.

Impacts to geology, leasable, and saleable mineral resources for Alternative 2 would be the same as described in **Section 4.4.2.1**.

Construction

Impacts to geology and mineral resources during construction activities would be the same as described in **Section 4.4.2.1**.

Operations, Maintenance, and Decommissioning

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

4.4.2.5 Alternative 3: Carefree Highway Route

Impacts to geology, leasable, and saleable mineral resources for Alternative 3 would be the same as described in **Section 4.4.2.1**.

Construction

Impacts to geology and mineral resources during construction activities would be the same as described in **Section 4.4.2.1**.

Operations, Maintenance, and Decommissioning

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

4.4.2.6 State Trust Land Route Variation Sub-alternative

Sub-alternative

The Sub-alternative route would be located completely on Tertiary sedimentary rocks.

Impacts to geology, leasable, and saleable mineral resources for this Sub-alternative would be the same as described in **Section 4.4.2.1**.

Construction

Impacts to geology and mineral resources during construction activities would be the same as described in **Section 4.4.2.1**. Although cut and fill activities are highly unlikely because of the very flat terrain in this area.

Operations, Maintenance, and Decommissioning

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

Primary Segment Common to All Action Alternatives Construction

Impacts to geology and mineral resources during construction activities would be the same as described in **Section 4.4.2.1**. Although cut and fill activities are highly unlikely because of the very flat terrain in this area.

Operations, Maintenance, and Decommissioning

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

4.4.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on geology or mineral resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed lands. Under this situation, impacts to geology and mineral resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

4.4.3 Mitigation and Residual Effects

Additional mitigation measures are not required, thus no residual effects are anticipated.

4.4.4 Unavoidable Adverse Impacts

Slight topographic modifications, if made, would cause minor unavoidable or residual impacts on geology. There would be no unavoidable adverse impacts to mineral resources.

4.5 HAZARDOUS MATERIALS AND HAZARDOUS AND SOLID WASTE

4.5.1 Indicators and Methods

The following indicators were considered when analyzing potential impacts to resources from hazardous materials and hazardous and solid waste:

- Types of hazardous materials transported and used for the Project,
- Potential for generating or encountering soil contamination during construction, and
- Existing risk assessments of effects of hazardous materials.

4.5.2 Direct and Indirect Effects by Alternative

The primary direct and indirect impacts from hazardous materials and hazardous and solid waste during construction and operation of the proposed facilities would be associated with:

- Exposure of workers to hazardous materials during transportation and use of these materials;
- Generation of solid and hazardous wastes from materials used and transportation and eventual treatment or disposal of these wastes;
- Releases of hazardous materials from potential leaks and spills and potential contamination of surrounding soils and surface waters; and
- Encountering potential existing soil contamination during construction.

Potential effects from the Project involving hazardous materials would be associated with the release of hazardous materials to the environment due to improper use, storage, or disposal of hazardous materials and/or generating contaminated soil from releases of hazardous materials. Direct effects of such releases could include contamination of vegetation, soil, and water, which could result in indirect effects to human and wildlife populations. These effects have the potential to occur during construction, operation, maintenance, and decommissioning of the Project.

With adherence to applicable laws and regulations as well as applicant-committed EPMs, hazardous materials would be properly handled and all wastes would be properly contained, transported, and disposed off site. In this case, there should be no impacts to workers, the general public, surrounding soils, surface water, or groundwater. A variety of safety-related plans and programs would be implemented to ensure safe handling, storage, and use of hazardous materials. Project personnel would be supplied with appropriate supplies and equipment for handling hazardous materials and would be properly trained in the use of this equipment. They would be trained in the handling, use, and clean-up of hazardous materials used in the Project, as well as procedures to be followed in the event of a leak or spill. Adequate supplies of appropriate clean-up materials would be available for use in the Project.

4.5.2.1 Impacts Common to All Action Alternatives

All Action Alternatives would involve the use of hazardous materials and generation of solid and hazardous waste during construction and operation of the Project. Certain chemicals and materials that would be used are characterized as hazardous materials. Improperly handled chemicals and other hazardous materials have the potential to cause health issues in humans and environmental impacts. A list of identified hazardous materials that may be used in the Project during construction activities and operation is provided in **Table 4.5-1**. In general, the types, quantities of materials, and management of these materials would not change under each alternative.

Table 4.5-1 Possible Hazardous Materials Used in the Project

Diesel Fuel	Paints and coatings
Gasoline	Dielectric fluids
Propane	Pesticides
Cleaning solvents	Explosives
Lubricating oils/grease	Glycol-based antifreeze
Hydraulic fluid/gear oils	Lead-acid storage batteries and electrolyte solution
Other batteries	Lubricating grease

Human exposure to hazardous materials above their recommended limit values may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability, or death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substance involved). Examples of toxic substances include most heavy metals, pesticides, and benzene (a carcinogenic component of gasoline). Ignitable substances are hazardous because of their flammable properties. Gasoline, hexane, and natural gas are examples of ignitable substances. Corrosive substances are chemically active and can damage other materials or cause severe burns upon contact. Examples include strong acids and bases such as sulfuric (battery) acid or lye. Reactive substances may cause explosions or generate gases or fumes. Explosives and, pressurized canisters are examples of reactive materials.

Exposure of Project workers to hazardous materials during construction and operation of the Project would be limited by compliance with applicable EPA, DOT, and OSHA regulations on the transportation, storage, use, and disposal of hazardous materials.

During construction and operation of the facilities, certain waste materials would be produced that would need to be disposed. All wastes generated in the Project would be containerized on site and then transported off site to existing, permitted waste management facilities. Such waste would include those generated during the normal course of construction and operation and any wastes generated through spills of hazardous materials or cleanups of existing contamination that may be encountered during construction. Potential impacts from hazardous materials, wastes, and regulated, nonhazardous solid wastes would be reduced by adherence to the state and federal statutes and regulations listed in **Section 3.5** as well as the applicant-committed EPMs.

The principal environmental impact involving hazardous materials associated with the Project would be related to the potential mobilization of contaminants resulting in exposure of workers and the general public (i.e., excavation and handling of contaminated soil). Hazardous materials in the construction area may require special handling as toxic substances and hazardous waste can create an exposure risk to workers and the general public due to spills or upset or from excavation and transport.

4.5.2.2 Proposed Action

Construction

Waste streams generated during construction of the Proposed Action would include: municipal solid waste (MSW), sewage, construction debris, non-hazardous regulated wastes, and small quantities of hazardous wastes. MSW from the workforce would be collected, contained, and trucked to an off-site permitted landfill. Sewage would be collected in portable sanitary facilities and removed by a licensed contractor for off-site treatment and disposal in an existing permitted treatment facility. Non-hazardous construction debris would be generated during construction consisting of concrete, wood, scrap metal, and waste packaging materials. These materials would be recycled or disposed of off-site in a permitted landfill. Hydrocarbon or hazardous wastes may be generated from maintenance of heavy equipment in the field. These wastes would include: used oil and grease, antifreeze, solvents, rags, and wipers. These wastes would be properly contained, labeled, and recycled or disposed of off-site in existing permitted facilities. All wastes produced during construction would be managed in compliance with state and federal regulations and recycled or disposed of in existing, permitted off-site facilities. These waste management practices would therefore produce minor and short-term adverse environmental impacts.

During construction operations, hazardous materials such as vehicle fuels, oils, and other vehicle maintenance fluids would be used and stored in construction staging yards. Although these materials would be stored within secondary containment, there is potential for incidents involving releases of gasoline, diesel fuel, oil, hydraulic fluid, and lubricants from vehicles or other equipment or the release of paints, solvents, adhesives, or cleaning chemicals from construction activities. Improperly maintained equipment could leak fluids during construction operation and while parked. Spills and leaks of hazardous materials during construction activities could potentially result in soil or surface water contamination. APS plans to minimize, avoid, and/or clean up unforeseen spills of hazardous materials by ensuring construction would be performed in accordance with APS' Construction Storm Water Pollution Prevention Plan (SWPPP). Despite implementation of the Construction SWPPP, there is a low likelihood that accidental spills of hazardous materials could still occur outside of containment where they could contaminate the soil. If surface runoff contacted these spills before they were cleaned up it could become contaminated. This is considered to be a minor and short-term adverse impact.

Helicopters may be used in areas without adequate access roads or where access is limited for construction and installation of structures, and support trips to transport material and workers to structure sites and material and equipment staging areas. Helicopters could be used during wire installation for pulling and support trips. The operations area of the helicopter would be limited to helicopter staging areas and positions along the ROW which have previously been disturbed for other purposes. Helicopter fueling would occur at staging areas or at a local airport using the helicopter contractor's fuel truck, and would be supervised by the helicopter fuel service provider. The helicopter and fuel truck would stay overnight at a local airport or at a staging area if adequate security is in place. Spills and leaks of hazardous materials during helicopter construction activities due to handling and storage of helicopter fuel in staging areas could potentially result in localized soil or surface water contamination. This is considered to be a minor, short-term impact.

Earth excavation would be limited to areas at and near transmission structures. As described in **Section 3.5**, no known existing environmentally contaminated sites are located along the Project alignments. Soil that is excavated from a site during construction containing hazardous materials could be a hazardous waste if it was contaminated and exceeded specific regulatory criteria caused by the contamination. Such contaminated soil could result from a spill of hazardous materials being used in construction, or encountering an area of existing contamination caused by a previous use within the proposed ROW. Remediation (cleanup and safe removal/disposal) of hazardous wastes found at a site would be required if excavation of these materials is performed. Contaminated soil exceeding regulatory limits for construction backfill would be transported to offsite, permitted disposal facilities. This is considered to be a minor, short-term impact. Contaminated soil removed from the construction area would be transported according to state and federal regulations and be replaced by import soil approved for backfill. Even if soil at a contaminated site does not have the characteristics required to be defined as hazardous wastes, remediation of the site may be required by state and local regulatory agencies subject to jurisdictional authority. Cleanup requirements would be determined on a case-by-case basis by the agency taking lead jurisdiction. Online government environmental databases, were reviewed to identify sites with known contamination or having a potential to contaminate the Project construction areas and these were discussed in **Section 3.5**. Based on existing information, the likelihood that existing contamination would be encountered during construction is considered to be minimal. Distance from the alignment and physical barriers, such as roads and other facilities should provide buffers that limit surface migration of contaminants from the existing known sources of potential contamination.

Operations, Maintenance, and Decommissioning

Operation of the transmission line facilities would utilize little in the way of hazardous materials and would generate only minor amounts of MSW, which would be brought back to the service center for disposal. Transformer oils, associated with substation equipment, would be used in closed transformers and certain other electrical devices. These are highly refined petroleum oils with low vapor pressure, high flash point, and low toxicity. In normal use, they are fully contained within the electrical apparatus which themselves would be located in secure, fenced facilities. These management practices would therefore produce negligible environmental impacts in the long term.

Sulfur hexafluoride (SF_6) would be used as a gaseous dielectric medium in system circuit breakers. It is a stable chemical and poses no fire safety problems (Nailen 2009). SF_6 is not a toxic gas and the small releases during equipment maintenance and servicing do not pose public or wildlife health risks.

4.5.2.3 Alternative 1: Proposed Action with Additional Corridor

The types of wastes managed and the applicable management practices applied during construction, operation, maintenance, and decommissioning of the Action Alternatives would be practiced in essentially the same manner as the Proposed Action. The environmental impacts of these practices for the Action Alternatives would therefore be the same as the Proposed Action.

4.5.2.4 Alternative 2: ROW South of SR 74

The environmental impacts related to waste management for construction and operation of this Action Alternative would essentially be the same as the Proposed Action.

4.5.2.5 Alternative 3: Carefree Highway Route

The environmental impacts related to waste management for construction and operation of this Action Alternative would essentially be the same as the Proposed Action.

4.5.2.6 State Trust Land Route Variation Sub-alternative

Sub-alternative

The environmental impacts related to waste management for construction and operation of this Sub-alternative would essentially be the same as the Proposed Action. There is a closed LUST site indicated by the online database search near the alignment of this alternative along 211th Avenue. There is a livestock corral northwest of the intersection of 211th Avenue and Cloud Road. Without more detailed studies that would be conducted if this Sub-alternative was selected as the preferred alternative, it is unknown if either of these two sites would result in a potential to encounter pre-existing contamination in the Sub-alternative alignment in this area.

Primary Segment Common to All Action Alternatives

The environmental impacts related to waste management for construction and operation of this Primary Segment would essentially be the same as the Proposed Action.

4.5.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts hazardous materials or solid or hazardous waste as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed lands. Under this situation, hazardous materials would be utilized and solid or hazardous wastes would be generated. The degree of potential for impacts to hazardous waste sites, and the amount of those solid or hazardous waste generated would depend on the route selected.

4.5.3 Mitigation and Residual Effects

If the Sub-alternative were selected as the preferred alternative, site-specific inquiries into the presence, if any, of pre-existing contamination from a LUST site and a corral in the vicinity of the Sub-alternative alignment should be conducted in advance of locating structures for the power line.

Implementation of this mitigation measure would reduce and/or eliminate any potential residual effects.

4.5.4 Unavoidable Adverse Impacts

Wastes produced by the Proposed Action would be managed according to all applicable regulations in permitted waste management facilities to minimize environmental impacts. These wastes would contribute to the environmental impacts allowed by the waste management facility permits and thus constitute a negligible unavoidable adverse impact.

4.6 LAND USE AND RANGE RESOURCES

4.6.1 Indicators and Methods

The following indicators would demonstrate the effect of the Project on land use and range resources within the Study Area:

- Conflict with existing or future land uses
- Compliance with land management plans and zoning
- Conflict with authorized uses
- Number of acres in each grazing allotment that would be affected during the short- and long-term under each alternative

Table 4.6-1 describes the range of aspects of quality, magnitude, and duration of any effects resulting from the Project to land use and range resources.

The miles and/or acreage of effects to various land uses were calculated using GIS and temporary and permanent disturbance estimates (**Chapter 2**). Where a range of disturbance estimates is possible (e.g. pulling/tensioning sites would occur between 2 and 3 miles apart) the more conservative value is used to compare the maximum disturbance that would occur.

Table 4.6-1 Description of Land Use and Range Resources Effects Levels

ATTRIBUTE OF EFFECT		DESCRIPTION RELATIVE TO LAND USE AND RANGE RESOURCES
Quality	Beneficial	An improvement to current land uses or range resources.
	Adverse	A degradation to current land uses or range resources.
Magnitude	Negligible	Very little effect on land uses such that the effect would not be perceptible to a human observer or user. Action would be in compliance with land management plans and zoning and would not conflict with existing ROWs or other authorized uses. Less than 5 percent of the total land use or grazing allotment would be affected.
	Minor	An effect that changes less than 10 percent of a land use. Action would be in compliance with land management plans and zoning and would not conflict with existing ROWs or other authorized uses. More than 5 percent but less than 10 percent of the total land use or grazing allotment would be affected.
Magnitude	Moderate	An effect that changes 10 to 25 percent of a land use. Action may or may not be in compliance with land management plans and zoning and may or may not conflict with existing ROWs or other authorized uses. More than 10 percent but less than 25 percent of the total land use or grazing allotment would be affected.
	Major	An effect that changes more than 25 percent of a land use. Action would not be in compliance with land management plans and zoning and would not conflict with existing ROWs or other authorized uses. More than 25 percent of the total land use or grazing allotment would be affected.
Duration	Short-term	10 years or less.
	Long-term	More than 10 years.

4.6.2 Direct and Indirect Effects by Alternative

Tables 4.6-2 through **4.6-9** provide a summary of the surface management and land management plans; jurisdiction, planning and zoning; future land uses; ROWs; and grazing allotments that would be directly affected by the Proposed Action and Action Alternatives. A discussion of effects common to all alternatives follows. A comparison of land use and range resource effects that are specific to each alternative is provided in **Sections 4.6.2.2** through **4.6.2.6**.

Surface Management and Land Management Plans

The ROWs of the Proposed Action and Action Alternatives cross private lands and lands managed by the BLM, USBR, and State Trust land (**Table 4.6-2**).

Table 4.6-2 Surface Management Crossed by the Action Alternatives (miles)

SURFACE MANAGEMENT	PROPOSED ACTION/ALT. 1	ALT. 2	ALT. 3	SUB-ALTERNATIVE	PRIMARY SEGMENT
BLM	9.0	4.0	1.9	0.0	0.0
USBR	0.1	0.1	0.6	0.0	0.0
State Trust	24.7	25.8	26.6	4.0	4.0
Private	4.4	7.6	9.3	0.0	0.0

Jurisdiction

Table 4.6-3 details the jurisdictions crossed by the ROW under the Proposed Action and Action Alternatives.

Table 4.6-3 Jurisdiction Crossed by the Action Alternatives (miles)

JURISDICTION	PROPOSED ACTION/ ALT. 1	ALT. 2	ALT. 3	SUB-ALTERNATIVE	PRIMARY SEGMENT
Buckeye	5.4	5.4	5.4	0.0	0.0
Surprise	0.12	0.12	0.12	0.0	0.0
Peoria	10.6	12.0	11.4	0.0	0.0
Maricopa County	22.2	20.0	21.7	4.0	4.0

Impacts to Land Use

The ROW of the Proposed Action and Action Alternatives crosses a variety of existing and future land uses as summarized in **Table 4.6-4**.

Table 4.6-4 Existing and Future Land Use Crossed by the Action Alternatives (miles)

FUTURE LAND USE	PROPOSED ACTION/ALT. 1	ALT. 2	ALT. 3	SUB-ALTERNATIVE	PRIMARY SEGMENT
Canal[1]	0.6	0.6	0.5	0.0	0.0
Commercial	0.4	0.8	0.6	0.0	0.0
Golf Course	0.0	0.0	0.4	0.0	0.0
Industrial	0.3	0.3	0.3	0.1	0.1
Lake/Water	0.2	0.2	0.2	0.0	0.0
Light Industrial	0.5	0.5	0.0	0.0	0.0
Mixed Use	0.2	0.1	0.2	0.0	0.0
Open Space/ Greenbelt	1.0	1.0	1.0	0.0	0.0
Recreation	7.2	3.1	3.4	0.0	0.0
Regional Park	0.3	0.3	0.2	0.0	0.0
Residential Low Density (0-2 du[2]/acre)	25.4	28.4	28.8	3.8	3.8
Residential Medium Density (2.1-15 du[2]/acre)	2.1	2.1	2.7	0.0	0.0

[1]Central Arizona Project
[2]dwelling units

Rights-of-Way

Existing ROWs on BLM-managed public land that would be crossed by the Proposed Action and Action Alternatives are listed in **Table 4-6.5**. The ROWs consist of various transmission, distribution, and communication lines; roads, and easements. The Sub-alternative (State Trust Land Route Variation) does not cross any existing ROWs on BLM-managed public land because it would occur entirely on State Trust land.

Grazing

The ROW for the Proposed Action and Action Alternatives would cross grazing allotments on BLM-managed public land and State Trust land located within the Study Area (**Tables 4.6-6** through **4.6-9**).

Table 4.6-5 BLM Rights-of-Way Crossed by the Action Alternatives

ROW SERIAL #	ROW HOLDER	DESCRIPTION	PROPOSED ACTION/ALT. 1	ALT. 2	ALT. 3
AZA 000390	Arizona State Highway	Road	X	X	0
AZA 000624	Arizona State Highway	Road	X	X	0
AZA 006105	Arizona State Highway	Road	X	X	0
AZA 010224	City of Peoria	Road	X	0	0
AZA 023254FD	Seven West Prop.	Patent	X	X	0
AZA 027843	Larry W. White	Section 302 FLPMA	X	0	0
AZA 033383	Accipiter Communications	Fiber Optic Facilities	X	0	0
AZA 03338301	Accipiter Communications	Fiber Optic Facilities	X	0	0
AZA 035079	APS	Other Energy Facilities	X	X	0
AZA 013875	BLM Lake Havasu F.O.	Other Energy Facilities	X	X	X
AZA 017813	BLM Lake Havasu F.O.	Road	X	X	X
AZA 021410FD	Arizona White Tank Assoc.	Patent	X	X	X
AZA 022075	BLM Lake Havasu F.O.	Water Facility	X	X	X
AZA 030349	West Maricopa Combine, Inc.	Water Facility	X	X	X
AZA 033224	Town of Buckeye	Road	X	X	X
AZA 033449	Town of Buckeye	Recreation	X	X	X
AZA 033510	APS	Other Energy Facilities	X	X	X
AZA 033551	Southwest Gas Corp.	Oil and Gas Facilities	X	X	X
AZA 033552	Accipiter Communications	Fiber Optic Facilities	X	X	X
AZA 033554	Lyle Anderson Dev. Co.	Other Energy Facilities	X	X	X
AZA 033569	APS	Other Energy Facilities	X	X	X
AZA 035079	APS	Other Energy Facilities	X	X	X

Source: BLM 2012e
X = crossed by alternative

Table 4.6-6 Grazing Allotments Crossed by the Action Alternatives (miles)

SURFACE MANAGEMENT	ALLOTMENT NAME	PROPOSED ACTION/ ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	SUB-ALTERNATIVE	PRIMARY SEGMENT
BLM	Douglas	1.5	1.5	1.5	0.0	0.0
	Lower Bo Nine	1.5	5.4	5.0	0.0	0.0
	Bo Nine	5.8	0.0	0.0	0.0	0.0
	West Wing Mountain	0.1	0.1	0.1	0.0	0.0
State	Douglas 5-355	7.9	7.9	7.9	0.0	0.0
	Maughan 5-104568	5.4	0.0	0.0	0.0	0.0
	Durbano 5-1227	7.0	7.0	8.8	4.0	4.0
	Durbano 5-95000	3.9	3.9	3.9	0.0	0.0
	McGuire 5-2119	7.7	12.3	11.8	0.0	0.0
	Sheep Springs 5-94574.01	0.9	0.9	0.5	0.0	0.0
	Unnamed 5-308	5.1	5.1	5.1	0.0	0.0

Table 4.6-7 AUMs on Grazing Allotments Crossed by the Action Alternatives

SURFACE MANAGEMENT	ALLOTMENT NAME	PERCENTAGE OF ALLOTMENT LOCATED WITHIN STUDY AREA	TOTAL AUMS BY ALLOTMENT	AUMS WITHIN THE STUDY AREA	ACRES PER AUM
BLM	Douglas	18	144	26	497
	Lower Bo Nine	65	60	39	338
	Bo Nine	60	948	569	22
	West Wing Mountain	18	N/A	0*	0*
State	Douglas 5-355	23	1,753	403	29
	Maughan 5-104568	58	222	129	11
	Durbano 5-1227	71	948	673	29
	Durbano 5-95000	55	104	57	89
	McGuire 5-2119	60	1,170	702	20
	Sheep Springs 5-94574.01	46	1,524	701	5
	Unnamed 5-308	48	972	467	8

*Because only 0.1-mile of the ROW would cross West Wing Mountain, only a small fraction of an AUM would be affected; therefore a calculation of the AUMs impacted was not included.

Table 4.6-8 AUMs Removed from Production in the Short Term by the Action Alternatives

SURFACE MGMT	ALLOTMENT NAME	PROPOSED ACTION/ ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		SUB-ALTERNATIVE		PRIMARY SEGMENT	
		ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS
BLM	Douglas	3.3	<1	3.3	<1	3.3	<1	0.0	0	0.0	0
	Lower Bo Nine	5.2	<1	20.1	<1	20.0	<1	0.0	0	0.0	0
	Bo Nine	22.1	1	0.0	0	0.0	0	0.0	0	0.0	0
State	Douglas 5-355	17.5	<1	17.2	<1	17.5	<1	0.0	0	0.0	0
	Maughan 5-104568	17.0	1.5	0.0	0	0.0	0	0.0	0	0.0	0
	Durbano 5-1227	15.6	<1	15.7	<1	19.1	<1	9.2	<1	9.2	<1
	Durbano 5-95000	8.7	<1	8.7	<1	8.7	<1	0.0	0	0.0	0
	McGuire 5-2119	26.4	1.3	40.1	2	40.1	2	0.0	0	0.0	0
	Sheep Springs 5-94574.01	1.8	<1	1.8	<1	1.0	<1	0.0	0	0.0	0
	Unnamed 5-308	12.0	1.5	12.3	1.5	12.2	1.5	0.0	0	0.0	0

Table 4.6-9 AUMs Removed from Production in the Long Term by the Action Alternatives

SURFACE MGMT	ALLOTMENT NAME	PROPOSED ACTION/ ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		SUB-ALTERNATIVE		PRIMARY SEGMENT	
		ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTEDD	REDUCTION IN AUMS
BLM	Douglas	3.9	<1	3.9	<1	3.9	<1	0.0	0	0.0	0
	Lower Bo Nine	4.0	<1	14.2	<1	13.3	<1	0.0	0	0.0	0
	Bo Nine	15.4	<1	0.0	0	0.0	0	0.0	0	0.0	0
State	Douglas	21.0	<1	20.9	<1	21.0	<1	0.0	0	0.0	0
	Maughan 5-104568	14.3	1.3	0.0	0	0.0	0	0.0	0	0.0	0
	Durbano 5-1227	18.5	<1	23.1	<1	23.1	<1	10.7	<1	10.7	<1
	Durbano 5-95000	10.5	<1	10.5	<1	10.5	<1	0.0	0	0.0	0
	McGuire 5-2119	20.5	1	32.6	1.6	31.8	1.6	0.0	0	0.0	0
	Sheep Springs 5-94574.01	2.3	<1	2.3	<1	1.3	<1	0.0	0	0.0	0
	Unnamed 5-308	13.5	1.7	13.6	1.7	13.6	1.7	0.0	0	0.0	0

Access roads constructed outside of the ROW would generally be temporary, and therefore would only have a temporary effect on grazing. However, a permanent 14-foot wide centerline access road would be constructed within the ROW. Temporary effects to grazing allotments include the temporary loss of allotment acreage due to construction sites and the improvement or construction of temporary access roads outside of the ROW on grazing allotments (**Table 4.6-10**). Construction sites that would be constructed on grazing allotments include transmission structure pad construction areas (0.5 acre disturbance x 4.8 sites per route mile) and transmission conductor pulling/tensioning sites (1.8 acre disturbance x 0.5 sites per route mile). Permanent effects to grazing allotments include the permanent loss of allotment acreage due to the presence of transmission line structures (0.2 acre disturbance x 4.8 sites per route mile) and the permanent centerline access road within the ROW on grazing allotments (**Table 4.6-11**). Although it is unknown how many temporary and permanent sites would be on grazing allotments, the general disturbance and spacing estimates (**Chapter 2**) are used to capture approximate disturbance.

The acres of production that would be temporarily and permanently removed from production due to transmission line structures and access roads are summarized in **Tables 4.6-10** and **4.6-11**, respectively.

4.6.2.1 Impacts Common to All Alternatives

Construction

Land Ownership, Planning, and Management

Under the Proposed Action and all Action Alternatives there would be no change of ownership of federal lands. A ROW grant for BLM-managed public lands would be issued as described in **Section 2.3.2**.

While the Proposed Action would cross approximately 0.1-mile of USBR-managed lands containing the CAP, those lands are managed by the CAWCD, as described in **Section 3.6.2**. It is the policy of the USBR and CAWCD to disallow lateral encroachment (i.e., other ROW uses along the CAP ROW) unless USBR determines a benefit for the CAP (CAP 2011b). However, CAWCD and USBR are supportive of the transmission line laterally encroaching on the CAP ROW finding appropriate CAP benefit for so doing (CAP 2011b).

Construction of the Project would complete a project that is on the ACC Biennial Transmission Assessment and part of APS' 10-year plan filings, thus benefitting the reliability of the electrical infrastructure of the Project Area.

The EIS process addresses the policies in the City of Surprise General Plan calling for coordination between entities and identification of existing corridors (**Chapter 1** and **Section 2.7**).

The Proposed Action and all Action Alternatives would not conflict with the Maricopa County Regional Trail Plan or the City of Peoria's PROST.

The portion of the route common to the Proposed Action and all Action Alternatives within the Town of Buckeye would be within a BLM-designated utility corridor and would parallel other existing or approved transmission lines, thus keeping with compatible surrounding land uses.

Existing Land Use and Range Resources

Under the Proposed Action and all Action Alternatives, the ROW would be within a BLM-designated utility corridor in the southern portion of the Project Area near the Sun Valley Substation. The Proposed Action and all Action Alternative routes would cross BLM-managed public land that is currently used for recreation. Impacts to recreation resources are analyzed in **Section 4.9**. The amount of BLM-managed public lands crossed varies by alternative; however, in all cases the amount would be proportionally small compared to the total amount of BLM-managed public lands in the Study Area. Because the portion of BLM-managed public lands where the land use would be affected by the Proposed Action or any of the Action Alternative routes would be relatively small, overall impacts to BLM-managed public land use would be minor, regardless of alternative.

Private and State Trust lands crossed by the ROW under all Action Alternatives are undeveloped, with much of the State Trust land used as grazing allotments. Addition of the transmission line and associated disturbance (such as a centerline access road) would reduce the acreage available for grazing. Impacts to range resources are addressed under a separate heading below. Similar to the BLM-managed public lands discussed above, the amount of private and State Trust lands crossed varies by alternative; however, in all cases the amount would be proportionally small compared to the total amount of private and State Trust lands in the Study Area. Because the portion of private and State Trust lands where the land use would be affected by the Proposed Action or any of the Action Alternative routes would be relatively small, overall impacts to land use would be minor, regardless of alternative, although a more detailed discussion of potential impacts are discussed below by alternative.

Potential effects to private lands could include a decrease in property values due to the presence of a transmission line and perceived potential health effects to residents related to EMF. Further discussion related to State Trust land revenue and private land values is provided in **Section 4.10**. Analysis of impacts to public health and safety from EMF is contained in **Section 4.7**.

State Trust lands are managed to bring revenue to the state; therefore, the removal of acreage of State Trust lands used for grazing would directly affect the revenues the state could receive through grazing leases or other authorized uses. Further discussion related to State Trust land revenue effects is provided in **Section 4.10**.

The crossing of existing BLM ROWs by the proposed ROW under the Proposed Action or any of the Action Alternatives should not affect the management or administration of the existing ROWs. There would be no land use impacts to existing commercial or industrial areas, or utilities under the Proposed Action or any of the Action Alternatives. Impacts to air transportation are analyzed in **Section 4.12**.

Table 4.6-10 Acres of Grazing Allotments Removed from Production in the Short Term

SURFACE MGMT	ALLOTMENT NAME	PROPOSED ACTION/ ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		SUB-ALTERNATIVE		PRIMARY SEGMENT	
		ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED
BLM	Douglas	3.3	<1	3.3	<1	3.3	<1	0.0	0	0.0	0
	Lower Bo Nine	5.2	<1	20.1	<1	20.0	<1	0.0	0	0.0	0
	Bo Nine	22.1	<1	0.0	<1	0.0	0	0.0	0	0.0	0
State	Douglas 5-355	17.5	<1	17.2	<1	17.5	<1	0.0	0	0.0	0
	Maughan 5-104568	17.0	1	0.0	0	0.0	0	0.0	0	0.0	0
	Durbano 5-1227	15.6	<1	15.7	<1	19.1	<1	9.2	<1	9.2	<1
	Durbano 5-95000	8.7	<1	8.7	<1	8.7	<1	0.0	0	0.0	0
	McGuire 5-2119	26.4	<1	40.1	<1	40.1	<1	0.0	0	0.0	0
	Sheep Springs 5-94574.01	1.8	<1	1.8	<1	1.0	<1	0.0	0	0.0	0
	Unnamed 5-308	12.0	1	12.3	1	12.2	1	0.0	0	0.0	0

Table 4.6-11 Acres of Grazing Allotments Removed from Production in the Long Term

SURFACE MGMT	ALLOTMENT NAME	PROPOSED ACTION/ ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		SUB-ALTERNATIVE		PRIMARY SEGMENT	
		ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED
BLM	Douglas	3.9	<1	3.9	<1	3.9	<1	0.0	0	0.0	0
	Lower Bo Nine	4.0	<1	14.2	<1	13.3	<1	0.0	0	0.0	0
	Bo Nine	15.4	<1	0.0	0	0.0	0	0.0	0	0.0	0
State	Douglas	21.0	<1	20.9	<1	21.0	<1	0.0	0	0.0	0
	Maughan 5-104568	14.3	1	0.0	0	0.0	0	0.0	0	0.0	0
	Durbano 5-1227	18.5	<1	23.1	<1	23.1	<1	10.7	<1	10.7	<1
	Durbano 5-95000	10.5	<1	10.5	<1	10.5	<1	0.0	0	0.0	0
	McGuire 5-2119	20.5	<1	32.6	<1	31.8	<1	0.0	0	0.0	0
	Sheep Springs 5-94574.01	2.3	<1	2.3	<1	1.3	<1	0.0	0	0.0	0
	Unnamed 5-308	13.5	1	13.6	1	13.6	1	0.0	0	0.0	0

Range Resources

Under the Proposed Action and all Action Alternatives one percent or less of the portion of each grazing allotment in the Study Area would be impacted in the short and long term. In most cases less than one AUM would be impacted, and in all cases less than two AUMs. In all allotments less than one percent of the AUMs would be affected. Therefore, the Proposed Action would have a negligible effect on grazing allotments. However, during construction activities, animals using the various allotments where activities are occurring would likely be temporary displaced from the immediate area until construction activities are completed. Available forage from the disturbed areas would either be temporarily lost until revegetation activities are successful or permanently lost. Overall, impacts to range resources would be negligible and range from short-term to long-term.

Operations, Maintenance, and Decommissioning

Operations and maintenance activities under the Proposed Action and Action Alternatives would be conducted within the authorized ROW and in accordance with any agreements with the issuing agencies and land owners. No additional effects regarding land use (ownership, administration and management of lands, as analyzed in this section) would be anticipated as a result of the operations and maintenance of the Project. There would not be any additive effects to land use and range resources related to the operations and maintenance of the 230kV line in the future.

Removal of the 500kV transmission line upon completion of the Project under the Proposed Action and Action Alternatives would result in relinquishing the ROW. Land previously occupied by the ROW and associated transmission line structures would be available for other land uses. Long-term beneficial impacts to land use would be negligible to minor depending on the effects caused by the presence of the line. There would not be any additive effects to land use and range resources related to the decommissioning of the 230kV line in the future.

4.6.2.2 Proposed Action

Amendment of the RMP

The BLM Bradshaw-Harquahala RMP (BLM 2010a) requires that all ROWs, for transmission lines greater than 115kV, be within a designated utility corridor and the RMP does not provide for such a utility corridor along SR 74 where a portion of the Proposed Action would be located. The portion of BLM-managed public lands required to create a single-use utility corridor and where an RMPA would be required (needed for the establishment of the utility corridor and to change the existing VRM class designations described in **Section 4.14**) under the Proposed Action totals approximately 173 acres. The total acreage of BLM-managed public lands within the Study Area is approximately 13,234 acres. The acreage where land use would change with the Proposed RMPA designating the utility corridor would represent less than one percent of the BLM-managed public lands in the Study Area. The land use that the RMP prescribes for the area containing the proposed utility corridor is part of the Castle Hot Springs SRMA and is also designated a transportation corridor. Impacts to recreation and transportation that would result from the

Proposed Action are discussed in **Sections 4.9** and **4.12**, respectively. The impact of the Proposed RMPA on land use would be negligible.

However, the change in land use management that would result in designation of a single-use utility corridor through the Proposed RMPA would allow this transmission line development on BLM-managed public lands north and south of SR 74. Under the RMP, the BLM-managed public lands are presently managed for recreational uses and a transportation corridor. Amending the RMP to allow establishment of a single-use utility corridor and construction of a transmission line would fundamentally change the planned use of these lands, changing the course of management prescribed by the RMP. RMP Decision LR-30 would be eliminated under the Proposed Action. This would be a long-term impact to land use management for this specific area and the lands immediately adjacent to the single-use corridor.

The process of developing the Bradshaw-Harquahala RMP was holistic and inclusive; local communities, governments, and interest groups actively engaged in the planning process. The RMP planning process engaged in proactive and visionary planning, and sought to determine lands needed for recreation and open space. The BLM-managed public lands north of SR 74 have historically been heavily used for recreation. Prior to development of the current RMP, the lands in the vicinity of SR 74 were heavily used for recreation. The lands in the vicinity of SR 74 are designated by the RMP as part of the Castle Hot Springs SRMA; SRMAs are areas of intensive recreation use that will be managed to retain the recreation opportunities while protecting other resources and reducing user conflicts (BLM 2010b). In the RMP the BLM created a corridor specific to transportation development north of SR 74, to coincide with planned future widening of the highway. The RMP decisions focused the management of BLM-managed public lands in the vicinity of SR 74 on recreation uses and open space, while allowing for other uses, such as potential expansion of SR 74 and rangeland uses.

Amending the Bradshaw-Harquahala RMP under the Proposed Action to establish a single-use utility corridor north of SR 74 and change the VRM classes that would allow for construction of a transmission line would change and could adversely impact the recreational experience that was envisioned in the RMP and would be a fundamental shift for the land use management of the area.

Construction

Land Ownership, Planning, and Management

The ROW of the Proposed Action would cross nine miles of BLM-managed public land, 0.1-mile of USBR land, 24.7 miles of State Trust land, and 4.4 miles of private lands.

Federal - Amendment of the Bradshaw-Harquahala RMP would enable the Proposed Action to meet Decisions LR-2 and LR-15. The Proposed Action would include a 230kV transmission line within the same ROW as the 500kV transmission line, meeting Decision LR-16 to co-locate smaller utility lines within corridors. The impact of the Proposed Action on visual resources is analyzed in **Section 4.14**, meeting the requirements of Decision LR-18.

The proposed ROW would be within the area of BLM-managed public lands that are currently designated within the Bradshaw-Harquahala RMP as a transportation corridor and SRMA, which would effectively reduce the area available for transportation and recreation

within the corridor. The addition of the utility corridor and transmission line would reduce the size of the transportation corridor; however, based on the proposed location of the transmission line and the conceptual plans envisioned for the expansion of SR 74 (MAG Interstate 10 – Hassayampa Valley Transportation Framework Study 2007), there would be negligible impacts to the transportation corridor.

State - The Proposed Action would be entirely contained within the ACC-certificated route and would not require any further action on the part of the ACC. Present ownership and management of State Trust lands would not change under the Proposed Action. State Trust lands south of SR 74 and just west of the Morgan Substation would be directly impacted by visual effects and ground disturbing activities (pers. comm. ASLD May 23, 2013).

Maricopa County - The Proposed Action would encourage appropriate buffers to mitigate conflicting land uses (Maricopa County Comprehensive Plan Policy L.4.1) by routing the transmission line across BLM and State Trust lands, avoiding private lands where practicable, avoiding conflicts between the transmission line and uses on private lands, such as residential development. However, placement of the transmission line on BLM-managed public lands would create potential for conflicts between recreational use and the utility infrastructure. Regarding Policy L11.1, under the Proposed Action, the ROW would occupy space that is currently open space on BLM-managed public lands, albeit a relatively small portion. Impacts to recreation resources are analyzed in **Section 4.9**. Regarding Policy L11.3, micrositing of monopoles, or potential small realignments within the ACC-certificated route on BLM-managed public land as discussed in **Section 4.14.4** would protect ridgelines, foothills, and other visually sensitive areas to the extent possible.

City of Peoria - The Proposed Action route would place the transmission line within an existing BLM transportation corridor, meeting Policy 3.B.4 of the city's General Plan and also would be situated within a utility corridor defined on the city's General Land Use map.

Planned Future Land Uses - The low/medium density residential and recreation land uses form the majority of the future land uses that would be crossed by the Proposed Action. The presence of the transmission line ROW would limit the development of these land uses. Approximately 660 acres of land designated for residential low/medium density development within the Study Area would permanently be removed from development potential. This represents approximately one percent of the overall land designated as future low/medium density residential land use within the Study Area which is a negligible effect on this land use. Approximately 180 acres of land designated for recreation would permanently be removed from development potential. This represents approximately seven percent of land designated for recreation which is a minor, permanent adverse effect on this land use.

Under the Proposed Action, the transmission line and associated ROW would be located within the northern boundary of the BLM-designated transportation corridor north of SR 74. Where the transmission line would be south of SR 74 it would be outside of the proposed SR 74 expansion areas. Analysis of land needs for the envisioned SR 74 expansion indicate that the presence of the transmission line and ROW within the transportation corridor would not impact this future land use.

The transmission line would be visible to future development in the northernmost State Trust land section inside of the Lake Pleasant Heights Planned Community District; however, the

planned development in this area has been designated for either open space or low density residential development, which may minimize the impact on future development. The Proposed Action route would bisect a large block of State Trust land west of the 211th Avenue alignment north of Cloud Road and east of US 50, impacting the ASLD's ability to master plan it for future development as a single project (pers. comm. ASLD May 23, 2013).

The Proposed Action route would cross much smaller amounts of other future land uses, including open space. The presence of a transmission line may affect the values of future open space and recreation development, depending on the amount of acreage lost and what kind of recreation would be developed in the vicinity of the transmission line.

Existing Land Use

The Proposed Action would cross approximately 1.5 miles of a parcel identified as an active lode mining claim. The presence of the transmission line structures could inhibit development of aboveground mining facilities and potentially underground mining activities in this specific area. This would be a moderate, long-term adverse effect on this active lode mining claim.

During construction activities, the Proposed Action may cause temporary delays in access to a gravel pit operation (ID 5220) just south of Patton Road and west of the Proposed Action route. The operation would be outside of the ROW; therefore the effect on this operation would be limited to construction activities. This would be a minor, short-term effect.

4.6.2.3 Alternative 1: Proposed Action with Additional Corridor

Similar to the Proposed Action, the construction and presence of a transmission line under Alternative 1 would conflict with the existing BLM Bradshaw-Harquahala RMP (BLM 2010a). In addition, under Alternative 1 a multiuse utility corridor would also be established on BLM-managed public lands that would begin at the centerline of SR 74 and extend 0.5-mile north, and also include the entire key-shaped block of BLM-managed public lands south of SR 74. Therefore, an RMPA would be required to establish a multiuse utility corridor for the ROW under Alternative 1 as well (the current VRM class designations would also need to be changed under the RMPA as described in **Section 4.14**). The multiuse utility corridor would be approximately 2,362 acres immediately north of SR 74 and 1,013 acres immediately south of SR 74, for a total of approximately 3,375 acres. The total acreage of BLM-managed public lands within the Study Area is approximately 13,234 acres. The acreage where land use would change with the Proposed RMPA designating the multiuse utility corridor would represent approximately 26 percent of the BLM-managed public lands in the Study Area. The land use that the RMP prescribes for the area containing the proposed multiuse utility corridor is part of the Castle Hot Springs SRMA and the lands north of SR 74 are also designated a transportation corridor. The change in land use that would result in designation of the multiuse utility corridor through the Proposed RMPA represents a major long-term impact to land use management. RMP Decision LR-30 would be eliminated under Alternative 1. The adverse impact under Alternative 1 would be of greater intensity than the Proposed Action because the area potentially affected by multiuse utility corridors under Alternative 1 is greater than the Proposed Action, and allows for more future development on BLM-managed public lands.

Otherwise, the effects to land use and range resources under Alternative 1 would be the same as described in **Sections 4.6.2.1** and **4.6.2.2**.

4.6.2.4 Alternative 2: ROW South of SR 74

Amendment of the RMP

Similar to the Proposed Action, the construction and presence of a transmission line under Alternative 2 with the prescriptions of the BLM would conflict with the BLM Bradshaw-Harquahala RMP (BLM 2010a). In addition, under Alternative 2 a multiuse utility corridor would also be established on BLM-managed public lands that would begin at the centerline of SR 74 and include the entire key-shaped block of BLM-managed public lands south of SR 74. Therefore, an RMPA would be required to establish a multiuse utility corridor for the ROW under Alternative 2, south of SR 74 as well (a change to the existing VRM class designations would also require an RMPA as described in **Section 4.14**). The multiuse utility corridor would be approximately 1,013 acres immediately south of SR 74. The total acreage of BLM-managed public lands within the Study Area is approximately 13,234 acres. The acreage where land use would change with the Proposed RMPA designating the multiuse utility corridor would represent approximately eight percent of the BLM-managed public lands in the Study Area. The land use that the RMP prescribes for the area containing the proposed multiuse utility corridor is part of the Castle Hot Springs SRMA. The change in land use that would result in designation of the multiuse utility corridor through the Proposed RMPA represents a minor long-term impact.

The change in land use management that would result in designation of a multiuse utility corridor through the Proposed RMPA would allow development on BLM-managed public lands south of SR 74. This would be a long-term impact to land use management. Under the Bradshaw-Harquahala RMP, the BLM-managed public lands are presently managed for recreational uses. Amending the RMP to allow establishment of a multiuse utility corridor and construction of a transmission line would fundamentally change the planned use of these lands, changing the course of management prescribed by the RMP that was recently completed through a thorough and inclusive process.

Under Alternative 2, the Bradshaw-Harquahala RMP would be amended, but no utility corridors would be created north of SR 74, and development would be allowed for on BLM-managed public lands south of SR 74. While the RMP would be amended under Alternative 2, the amendment effects to planned recreation would all occur south of SR 74, where recreational use is less than that north of SR 74. Thus, under this alternative, amending the RMP would have minimal effects on recreational planning.

Construction

Land Ownership, Planning, and Management

The ROW of Alternative 2 would cross 4.0 miles of BLM-managed public land, 0.1 mile of USBR land, 25.8 miles of State Trust land, and 7.6 miles of private lands. The effects to these lands under Alternative 2 would be the same as under the Proposed Action.

Federal - Under the Proposed Action there would be no change of ownership of federal lands. A ROW grant for BLM-managed public lands would be issued as described in **Section 2.3.2**.

Amendment of the Bradshaw-Harquahala RMP would enable Alternative 2 to meet Decisions LR-2 and LR-15. Alternative 2 would include a 230kV transmission line within the same ROW as the 500kV transmission line, meeting Decision LR-16 to co-locate smaller utility lines within corridors. The impact of Alternative 2 on visual resources is analyzed in **Section 4.14**, meeting the requirements of Decision LR-18.

The ROW under Alternative 2 would be within the area of BLM-managed public lands that are currently designated within the RMP as an SRMA, which would effectively reduce the area available for recreation within the corridor. Impacts to recreation are analyzed in **Sections 4.9**.

State - A portion of the Alternative 2 route would be located outside the ACC-certificated route and would require an amendment of the ACC-certificated route. State Trust lands south of SR 74 and just west of the Morgan Substation would be directly impacted by visual effects and ground disturbing activities (pers. comm. ASLD May 23, 2013).

Maricopa County -The Alternative 2 route would encourage appropriate buffers to mitigate conflicting land uses (Maricopa County Comprehensive Plan Policy L.4.1) by routing the transmission line across State Trust land and private land south of SR 74 reducing potential for conflicts between recreational use and the utility infrastructure within the SRMA. Impacts to recreation resources are analyzed in **Section 4.9**. However, conflicts between the transmission line and uses on private lands, such as residential development would arise under Alternative 2. Regarding Policy L11.1, impacts to open space on BLM-managed public lands would be minimal. Regarding Policy L11.3, micrositing of monopoles or potential small realignments within the ACC-certificated route, on BLM-managed public land as discussed in **Section 4.14.4** would protect ridgelines, foothills, and other visually sensitive areas to the extent possible.

City of Peoria - Alternative 2 would not meet Policy 3.B.4 of the city's General Plan because unlike the Proposed Action or Alternatives 1, the transmission line would not be within or immediately adjacent to a transportation/utility corridor.

Planned Future Land Use - Similar to the Proposed Action, the low/medium density residential and recreation land uses form the majority of the future land uses that would be crossed by Alternative 2. Approximately 732 acres of land designated for residential low/medium density development would permanently be removed from development potential, which is slightly more acreage than under the Proposed Action. However, similar to the Proposed Action this represents approximately one percent of land designated as future low/medium density residential land use within the Study Area which is a negligible effect on the overall land use. Approximately 74 acres of land designated for recreation would permanently be removed from development potential. This represents approximately three percent of land designated for recreation which is a negligible effect on this land use and less than that under the Proposed Action.

Under Alternative 2, the transmission line would be visible to future development in the northernmost State Trust land section inside of the Lake Pleasant Heights Planned Community District; however, the planned development in this area has been designated for either open space or low density residential development, which may minimize the impact on future development. The Alternative 2 route would bisect a large block of State Trust land

west of the 211th Avenue alignment north of Cloud Road and east of US 50, impacting the ASLD's ability to master plan it for future development as a single project (pers. comm. ASLD May 23, 2013).

The Alternative 2 route would cross similar amounts of other future land uses, including open space. The presence of a transmission line may affect the values of future open space and recreation development, depending on the amount of acreage lost and what kind of recreation would be developed in the vicinity of the transmission line.

Existing Land Use

The effects to mining under Alternative 2 would be similar to that under the Proposed Action, but slightly less of the active lode mining claim (1 mile versus 1.5 mile) would be crossed by Alternative 2.

4.6.2.5 Alternative 3: Carefree Highway Route

Amendment of the RMP

The Alternative 3 route would not require a newly established utility corridor on BLM-managed public lands that currently are without a designated utility corridor, therefore an RMPA would not be required under Alternative 3.

Construction

Land Ownership, Planning, and Management

The Alternative 3 route would cross 1.9 miles of BLM-managed public land, 0.6 mile of USBR land, 26.6 miles of State Trust land, and 9.3 miles of private lands. This alternative crosses the most private land of any of the alternatives.

Federal - Because the only BLM-managed public lands crossed by Alternative 3 would be within a BLM designated utility corridor, Decision LR-2 would be met. Alternative 3 would include a 230kV transmission line within the same ROW as the 500kV transmission line, meeting Decision LR-16 to co-locate smaller utility lines within corridors. The impact of Alternative 3 on visual resources is analyzed in **Section 4.14**, meeting the requirements of Decision LR-18.

State - A portion of the Alternative 3 route would be located outside the ACC-certificated route and would require an amendment of the ACC-certificated route. The Alternative 3 route would bisect a large block of State Trust land west of the 211th Avenue alignment north of Cloud Road and east of US 50, impacting the ASLD's ability to master plan it for future development as a single project (pers. comm. ASLD May 23, 2013).

Maricopa County - The Alternative 3 route would encourage appropriate buffers to mitigate conflicting land uses (Maricopa County Comprehensive Plan Policy L.4.1) by routing the transmission line across State Trust land and private land south of SR 74 eliminating potential for conflicts between recreational use and the utility infrastructure within the SRMA. Impacts to recreation resources are analyzed in **Section 4.9**. However, conflicts between the transmission line and uses on private lands, such as residential development would be greater under Alternative 3 than the Proposed Action or Alternatives 1 or 2. Regarding Policy L11.1, impacts to open space on BLM-managed public lands would be

minimal. Regarding Policy L11.3, micrositing of monopoles on BLM-managed public land as discussed in **Section 4.14.4** would protect ridgelines, foothills, and other visually sensitive areas to the extent possible, although this would be unlikely as the Alternative 3 route on BLM-managed public lands would occur within a designated utility corridor near the Sun Valley Substation.

City of Peoria - Alternative 3 would not meet Policy 3.B.4 of the city's General Plan because unlike the Proposed Action or Alternatives 1, the transmission line would not be within or immediately adjacent to a transportation/utility corridor. Alternative 3 would not conflict with the City of Peoria's PROST.

Planned Future Land Use - Similar to the Proposed Action, the low/medium density residential and parks/recreation land uses form the majority of the future land uses that would be crossed by Alternative 3. Approximately 756 acres of land designated for residential low/medium density development would permanently be removed from development potential, which is slightly more acreage than under the Proposed Action and Alternative 2. However, this represents approximately one percent of the overall land designated as future low/medium density residential land use which is a negligible effect on this land use within the Study Area. Approximately 74 acres of land designated for recreation would permanently be removed from development potential. This represents approximately three percent of land designated for recreation which is a negligible effect on this land use and less than that under the Proposed Action. The Alternative 3 route would bisect the future master planned communities of Saddleback Heights, Vistancia, and Lake Pleasant Heights, which are currently in various stages of planning for future development.

Alternative 3 would cross similar amounts of other future land uses, including open space. The presence of a transmission line may affect the values of future open space and recreation development, depending on the amount of acreage lost and what kind of recreation would be developed in the vicinity of the transmission line.

Existing Land Use

Alternative 3 does not cross any active lode mining claims. Alternative 3 would have the same effect to the gravel mining operation south of Patton Road as the Proposed Action.

4.6.2.6 State Trust Land Route Variation Sub-alternative

This Sub-alternative involves four miles of State Trust land. There would be no effect to BLM, USBR, or private lands. There would be no difference in impacts to range resources on the State Trust land affected by the Sub-alternative between the Sub-alternative route and the Primary Segment.

Sub-alternative

Regarding the Maricopa County Comprehensive Plan, the Sub-alternative route would not encourage appropriate buffers to mitigate conflicting land uses (Maricopa County Comprehensive Plan Policy L.4.1) by routing the transmission line across State Trust land adjoining private property containing residences. Conflicts between the transmission line and uses on private lands, such as residential development would be greater under the Sub-alternative than the Proposed Action or Alternatives 1, 2, or 3.

The Sub-alternative route would leave the block of State Trust land largely intact, preserving its future land use value for master planning. It would also create a boundary with land that has been identified for future employment uses associated with the projected expansion of the BNSF Railroad along the east side of US 60 between the Carefree Highway and Cloud Road alignments (pers. comm. ASLD May 23, 2013). The Sub-alternative route could have a negligible to moderate long-term beneficial impact to land use on this parcel of State Trust land depending upon future development actions in this area. If this route was selected, since it would be located outside the ACC-certificated route, it would require an amendment of the ACC-certificated route. When combined with the remainder of the ACC-certificated route, the Sub-alternative would have the least negative impact on State Trust lands in terms of number of acres affected and the configuration of potential development parcels (pers. comm. ASLD May 23, 2013).

However, the Sub-alternative route along Cloud Road and 211th Avenue would bring the transmission line in close proximity to existing residences. This would have no direct or indirect impact on land use, but would affect visual resources and socioeconomics, which are analyzed in **Sections 4.10** and **4.14**, respectively.

Primary Segment Common to All Action Alternatives

Regarding the Maricopa County Comprehensive Plan, impacts would be the same as those described under the Proposed Action.

The Primary Segment would follow the Proposed Action route. Bisecting the land along the Joy Ranch Road alignment under the Proposed Action route could compromise the future ability to utilize the lands for a master planned community, resulting in a long-term impact to land use on this parcel of State Trust land.

There would be no effect to mining.

4.6.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on land use and range resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to land use and range resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

4.6.3 Mitigation and Residual Effects

There is no mitigation proposed for land use and range resources, thus no residual effects are anticipated.

4.6.4 Unavoidable Adverse Impacts

Under the Proposed Action and all Action Alternatives the acreage of State Trust land available for grazing, allotment acreages, and AUMs would be reduced; and some private lands would no longer be available for residential development. Under the Proposed Action, and Alternatives 1 and 2, the Bradshaw-Harquahala RMP would be amended, planned land uses would change, and the potential would exist for user conflicts between recreationists and the transmission line development(s).

4.7 PUBLIC HEALTH AND SAFETY (NOISE, ELECTROMAGNETIC FIELDS, AND FIRE)

4.7.1 Indicators and Methods

Indicators described separately below for noise, EMF, and fire would demonstrate the effect of the Project on these issues/resources.

4.7.1.1 Noise

Noise levels are usually measured by units of dB, as discussed in **Section 3.7**. The primary indicator for noise levels for this assessment is the A-weighted average day-night sound level, defined as the L_{eq}, (in dBA, or the A-weighted decibel level). The "A-weighting" reflects the typical frequency-dependent sensitivity of average healthy human hearing. The term L_{eq} may also be expressed as the CNEL. The CNEL is calculated by adding a 5 dB penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.) and a 10 dB penalty to sound levels at night (10:00 p.m. to 7:00 a.m.), which provides for increased sensitivity during time periods when a quiet environment is expected.

The method for assessing the effects from noise is comparison of the projected baseline ambient noise levels with projected noise levels associated with the Project.

4.7.1.2 Electromagnetic Fields

The primary indicator for EMFs for this assessment is the magnetic flux density, **B**, expressed in units of G, or mG (where 1 G = 1 x 10^3 mG). Projected flux densities for each of the Action Alternatives are used.

The method for assessing the effects from EMFs is comparison of projected EMFs for the Project with respect to ICNIRP recommendations for voluntary public exposure limits.

4.7.1.3 Fire

The primary indicator for fire for this assessment is the Fire Regime Condition Class, which is a classification of the amount of departure from the historic fire regime. Descriptions of the two condition classes present within the Study Area that may be crossed by the Action Alternatives are provided in **Section 3.7.3.5**.

The method for assessing the effects from fire is comparison of the Project with respect to the relative amounts (linear distances) of Condition Class 2 fire regimes crossed by the Action Alternative routes.

4.7.2 Direct and Indirect Effects by Alternative

4.7.2.1 Impacts Common to All Action Alternatives

Construction

Noise

As described previously, the method for assessing the effects from noise is comparison of the projected baseline ambient noise levels with projected noise levels associated with the Project. Ambient sound level in terms of L_{dn} could be expected to range from 45 to 60 dBA, where L_{dn} (Day-night sound level) is defined as the L_{eq} (in dBA) for a 24-hour day with a penalty added to compensate for increased sensitivity to noise during usually quieter hours. The term L_{eq} may also be expressed as the CNEL. The CNEL is calculated by adding a 5 dB penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.) and a 10 dB penalty to sound levels at night (10:00 p.m. to 7:00 a.m.), which provides for increased sensitivity during time periods when a quiet environment is expected.

Noise during construction would be associated with the equipment used for the installation activities. The closest residential area, common to all the Action Alternatives, would be residences on West Myers Street, near N. 235th Avenue, which are less than 0.25 miles from the ROW (see **Table 3.7-2**). Maximum construction noise levels are expected from use of helicopters during conductor stringing and from heavy equipment used during construction activities on the ROW. It is expected that maximum noise levels at 50 feet from the helicopter would be 105 dBA and from heavy equipment at 50 feet to be in the range of 83 to 85 dBA (FHA 2006, in BLM 2009a). Sound levels are expected to diverge in open air resulting in a 6-dBA decrease for each doubling of distance from the source (EPA 1974; Barnes 1976 in BLM 2011c). At a distance of 0.25 mile (1,320 feet), this would result in a maximum noise level from helicopter use of 77 dBA, and from the other heavy equipment use ranging from 55 to 58 dBA. The maximum noise levels would be intermittent and temporary, as construction activities proceeded along the ROW, and would be incurred only during daylight (normal working hours would be 5:00 am to 4:00 pm in the summer, and 6:00 am to 5:00 pm in the winter).

Other residential areas, which could be receptors of noise from construction activities, are a minimum of 0.5 miles distant from any of Action Alternatives ROW (see **Table 3.7-2**) and are not expected to be affected by any discernible increase in noise during construction. Using a similar sound dissipation relationship as above, the maximum helicopter noise at 0.5 mile would be expected to be 71 dBA and the other heavy equipment noise maximums ranging from 51 to 49 dBA. The maximum noise levels would be intermittent and temporary, as construction activities proceeded along the ROW, and would be incurred only during daylight (normal working hours).

EMFs

During initial 500kV line construction and construction of the subsequent 230kV line, which would add conductors to existing structures at some point in the future, EMFs would not be of concern as the conductors would not be in service/operational during the construction period, thus no EMFs would be generated and no impacts from EMFs would occur.

Fire

Fire danger during construction activities associated with the Project under all Action Alternatives would be associated with equipment operations, personnel actions, and materials handling along the ROW during the construction activities. Construction activity could result in increased potential for fire in the ROW due to such occurrences as equipment or material sparks, workers smoking, or disturbances which cause non-native fire prone vegetation to establish itself. As the construction activities progress along the ROW, that particular section would be exposed to somewhat increased fire risk due to those activities and machinery presence. The increased risk would then subside as the construction activity progresses further down the ROW. This pulsed sequence of increased risk would occur both during initial construction of the 500kV line and again during the later construction of the 230kV line.

Operations, Maintenance, and Decommissioning

Noise

Noise from the ROW during operations and maintenance would be expected from heavy equipment and/or OHVs and pickup trucks used along the ROW, and would be expected to result in maximum noise levels in the 55 to 58 dBA range at a distance of 0.25 mile from the centerline of the ROW. Thus, the expected maximum noise levels should not exceed the expected ambient sound range from 45 to 60 dBA, where L_{dn} is defined as the L_{eq} (in dBA) for a 24-hour day at the closest residences on West Myers Street, near N. 235th Avenue, which are less than 0.25 miles from the ROW centerline.

During decommissioning activities, intermittent maximum sound levels would be expected to be similar to or less than those incurred during construction of the Project.

EMFs

EMFs and their effects are essentially equivalent among all Action Alternatives, when compared to levels defined by ICNIRP as recommendations for voluntary public exposure limits for EMFs. The ICNIRP recommended voluntary public exposure limit is 2,000 mG.

During normal operation and maintenance of any of the Action Alternatives, the expected range of EMFs is between 8 and 20 mG at the edge of the ROW, as discussed in **Section 3.7.2**, which also accounts for additive effects of paralleling other 500kV and 230kV lines which may be crossed. Other, smaller (69kV) lines may also be crossed, but would result in EMFs less than or similar to the projected range. The expected range of EMFs is at least 2 orders of magnitude less than the ICNIRP recommended exposure limit of 2,000 mG. The EMFs would thus be measureable but small, resulting in a minor but long-term impact, similar among all of the Action Alternatives.

During and after decommissioning, EMFs would not be of concern as the lines would not be in service during those periods, thus no EMFs would be generated.

Fire

Fire danger during operation of the transmission line would be associated with increased risk due to the physical presence of the transmission line and the conveyance of electrical energy over the electrical conductors. Physical presence of the transmission line may increase the likelihood of lightning strikes in the vicinity of the transmission line and structures, which would lead to a small increased risk of lighting caused fires along the entire route of the Project. Shield wires would be installed near the top of the structures and above the conductors, which would minimize the chance of lightning strikes. Additionally, mechanical malfunction or failure of transmission line components would have an associated risk of increased fire danger in the vicinity of the transmission line ROW. This increased risk would be present during the operational lifetime of the Project.

Fire danger during maintenance activities associated with the Project would be associated with equipment operations, personnel actions, and materials handling along the ROW affected during the maintenance activities, which could at times be similar to construction, although likely much less intense. The maintenance activities would occur from time to time and may either progress along the ROW or be confined to a particular section of the line undergoing maintenance. The portion of ROW undergoing maintenance would be exposed to somewhat increased fire risk due to those activities and machinery presence. The increased risk would then subside upon completion of each specific maintenance activity. It is expected that any changes to fire condition class would have already occurred during construction, and therefore additional changes to fire condition class are not expected due to maintenance activities.

Fire danger during decommissioning of the transmission lines would be associated with equipment operations, personnel actions, and materials handling along the ROW affected during the maintenance activities, which may be quite similar to those occurring during construction. The decommissioning activities would occur and would progress along the ROW as that particular section of the line undergoes de-construction during the decommissioning activities. The portion of ROW undergoing decommissioning would be exposed to somewhat increased fire risk due to those activities and machinery presence. The increased risk would then subside upon completion of decommissioning of that section of the transmission lines. It is expected that any changes to fire condition class would have already occurred during construction, and therefore additional changes to fire condition class are not expected due to decommissioning activities.

4.7.2.2 Proposed Action

Construction

Impacts to noise and EMFs under the Proposed Action would be the same as described in **Section 4.7.2.1**.

Fire

The Proposed Action route would cross 2.4 miles (or about 6 percent of the overall length) with vegetation presently in Fire Condition Class 2, with the remaining 35.8 miles (or about 94 percent of line length) crossing areas with vegetation in Fire Condition Class 1.

Increased fire danger during construction due to equipment operations, personnel actions, and materials handling along the ROW would be nearly equivalent for areas exhibiting vegetation in either Fire Condition Class 1 or Class 2. As the construction activities progress along the ROW, sections under construction would be exposed to somewhat increased fire risk due to those activities and machinery presence. The pulse of increased risk would subside as the construction activity progresses further down the ROW (both during initial construction of the 500kV line and later again during construction of the 230kV line).

Due to site disturbances from equipment and personnel during construction, there is a potential for vegetation in Fire Condition Class 1 to be disturbed to the extent that it would be altered to Fire Condition Class 2. Thus, for the Proposed Action, 35.8 miles (or 94 percent of line length) would be exposed to the potential for disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

Operations, Maintenance, and Decommissioning

Impacts to noise and EMFs under the Proposed Action would be the same as described in **Section 4.7.2.1**.

Fire

Fire danger after transmission line decommissioning may subside to levels near those prior to pre-construction, although disturbed areas may be subject to an increase in Fire Condition Class 1 to Fire Condition Class 2 if sufficient disturbance remains after decommissioning. Disturbed areas which increase from Fire Condition Class 1 to Fire Condition Class 2 as a result of any combination of transmission lines construction, operation and maintenance, and closure activities are expected to remain in Fire Condition Class 2 after transmission line decommissioning. Under the Proposed Action, 35.8 miles (or 94 percent of line length) would be exposed to the potential for vegetation-disturbance-caused changes from Fire Condition Class 1 to Fire Condition Class 2.

4.7.2.3 Alternative 1: Proposed Action with Additional Corridor

Construction

Impacts to noise, EMFs, and fire under Alternative 1 would be the same as described in **Section 4.7.2.1**.

Operations, Maintenance, and Decommissioning

Impacts to noise, EMFs, and fire under Alternative 1 would be the same as described in **Section 4.7.2.1**.

4.7.2.4 Alternative 2: ROW South of SR 74

Construction

Impacts to noise and EMFs under Alternative 2 would be the same as described in **Section 4.7.2.1**.

Fire

Alternative 2 would cross approximately two miles (or about five percent of line length) with vegetation presently in Fire Condition Class 2, with the remaining 35.4 miles (or about 95 percent of line length) crossing areas with vegetation in Fire Condition Class 1.

Due to site disturbances from equipment and personnel during construction, there is a potential for vegetation in Fire Condition Class 1 to be disturbed to the extent that it would be altered to Fire Condition Class 2. Thus, for Alternative 2, 35.4 miles (or 95 percent of line length) would be exposed to the potential for change of Fire Condition Class 1 to Fire Condition Class 2.

Operations, Maintenance, and Decommissioning

Impacts to noise and EMFs under Alternative 2 would be the same as described in **Section 4.7.2.1**.

Fire

Under Alternative 2, 35.4 miles (or 95 percent of line length) of the ROW would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

4.7.2.5 Alternative 3: Carefree Highway Route

Construction

Impacts to noise and EMFs under Alternative 3 would be the same as described in **Section 4.7.2.1**.

Fire

Alternative 3 would cross approximately 2.9 miles (or about eight percent of line length) with vegetation presently in Fire Condition Class 2, with the remaining 35.5 miles (or about 92 percent of line length) crossing areas with vegetation in Fire Condition Class 1.

Due to site disturbances from equipment and personnel during construction, there is a potential for vegetation in Fire Condition Class 1 to be disturbed to the extent that it would be altered to Fire Condition Class 2. Thus, for Alternative 3, the Carefree Highway route, 35.5 miles (or 92 percent of line length) would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

Operations, Maintenance, and Decommissioning

Impacts to noise and EMFs under Alternative 3 would be the same as described in **Section 4.7.2.1**.

Fire

For Alternative 3, 35.5 miles (or 92 percent of line length) would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

4.7.2.6 State Trust Land Route Variation Sub-alternative

Sub-alternative

Construction

Impacts to noise and EMFs under the Sub-alternative would be the same as described in **Section 4.7.2.1**.

Fire

Of the total distance traversed by the Sub-alternative route, 0.1 mile (or about 2 percent) traverses areas with vegetation presently in Fire Condition Class 2, with the remaining 3.9 miles (or about 98 percent) crossing areas with vegetation in Fire Condition Class 1.

Due to site disturbances from equipment and personnel during construction, there is a potential for vegetation in Fire Condition Class 1 to be disturbed to the extent that it would be altered to Fire Condition Class 2. Thus, for the State Trust Land Route Variation Sub-alternative, 3.9 miles (or about 98 percent) would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

Operations, Maintenance, and Decommissioning

Impacts to noise and EMFs under the Sub-alternative would be the same as described in **Section 4.7.2.1**.

Fire

For the State Trust Land Route Variation Sub-alternative, 3.9 miles (or about 98 percent) would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

Primary Segment Common to All Action Alternatives

Construction

Impacts to noise and EMFs for the Primary Segment would be the same as described in **Section 4.7.2.1**.

Fire

The Primary Segment crosses 0.6 miles (or about 15 percent) with vegetation presently in Fire Condition Class 2, with the remaining 3.4 miles (or about 85 percent) crossing areas with vegetation in Fire Condition Class 1.

Due to site disturbances from equipment and personnel during construction, there is a potential for vegetation in Fire Condition Class 1 to be disturbed to the extent that it would be altered to Fire Condition Class 2. Thus, by not constructing the Primary Segment (common to any of the Action Alternatives), 3.4 miles (or 85 percent) would avoid the

potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

Operations, Maintenance, and Decommissioning

Impacts to noise and EMFs under the Primary Segment would be the same as described in **Section 4.7.2.1**.

Fire

For the Primary Segment, 3.4 miles (or about 85 percent) would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

4.7.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts to noise, EMF, and fire as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to noise, EMF, and fire could be similar to those described for the Proposed Action and Action Alternatives. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

4.7.3 Mitigation and Residual Effects

A number of mitigation actions related to public health and safety would be undertaken to reduce potential impacts from the Project during periods of construction and operations, maintenance, and decommissioning activities as described in the following sections. EPMs and BMPs established (**Appendix 2A**) would also be followed for the Project.

4.7.3.1 General

Following construction and after the transmission line were to be placed into service, APS would respond to complaints of line-generated radio interference (RI) or television interference (TI) by investigating the complaints and implementing appropriate mitigation measures. The transmission line would be patrolled on a regular basis so that damaged insulators or other line materials that could cause interference are repaired or replaced.

As required by the ACC, through the conditions of a CEC, APS shall make every reasonable effort to identify and correct, on a case-specific basis, all complaints of interference with radio or television signals from operation of the transmission line and related facilities addressed in the CEC. APS shall maintain written records for a period of five years of all complaints of radio or television interference attributable to operation, together with the corrective action taken in response to each complaint. All complaints shall be recorded to include notations on the corrective action taken. Complaints not leading to a specific action or for which there was no resolution shall be noted and explained.

The transmission line configuration, hardware and conductor would limit the audible noise, RI, and TI due to corona. Tension would be maintained on all insulator assemblies to assure positive contact between insulators, thereby avoiding sparking. Caution would be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.

4.7.3.2 Noise

During construction, traditional large construction and ground moving equipment would be utilized, as outlined in **Table 2.4-3**, which would create noise during use. Noise-generating construction activities, such as the use of heavy equipment or helicopters, within 0.5-mile of residential areas, would be restricted to the hours of 7:00 am and 7:00 pm, thus avoiding generation of noise during the periods (7:00 pm to 7:00 am) when the CNEL measurements include a sound penalty for time periods when a quiet environment is expected.

During operation and maintenance of the Project, similar equipment to that described for construction may be used, which would generate noise. Generally, maintenance activities would be confined to typical workday hours, thus avoiding generation of noise during the periods (7:00 pm to 7:00 am) when the CNEL measurements include a sound penalty for time periods when a quiet environment is expected. Occasionally there may be emergency maintenance required, which may occur in the evening or nighttime hours, but that would take place very infrequently.

4.7.3.3 Fire

Fire prevention requirements would be included in the Project H&S plan and included in the POD; during construction, and construction contractors would need to comply with those requirements as a minimum. Additionally, APS would prepare an ERP for the Project which would include requirements for all onsite employees (both construction and operation) to receive annual fire prevention and response training, and would include requests to appropriate fire departments to participate in the training. Employees would be prohibited from smoking outside of company vehicles during dry summer months.

Fiber optic/static neutral cables would be installed at the top of the structures supporting the transmission lines, to serve as static wires. These static wires (sometimes referred to as shield wires) are grounded and installed at the very top of the structures to protect lower conductors from lightning.

Vegetation management would be undertaken by APS in accordance with their TVMP (**Appendix 2B**), as well as their IVM, which would include removal of all tall–growing vegetation within the wire zone, and preservation of low-growing herbaceous and woody plant communities that do not interfere with overhead transmission lines, or pose a fire hazard or hamper access.

APS would comply with industry standard codes governing the design and operation of high-voltage electric utility systems. Equipment would be designed such that if, for some reason, an energized phase conductor were to fall to the ground and create a line-ground fault, high-speed relay equipment would sense that condition and activate circuit breakers to quickly de-

energize the line. This would reduce the risk of fire from the high voltage transmission lines to a low level.

Implementation of mitigation measures would eliminate most of the potential residual effects, although at times, noise from the routine operations and future maintenance and eventual decommissioning activities would occur. Residual effects to fire may include the fact that disturbed areas may be subject to an increase in Fire Condition Class 1 to Fire Condition Class 2 if sufficient disturbance remains after any of those activities.

4.7.4 Unavoidable Adverse Impacts

4.7.4.1 Noise

Construction of the Project would require the use of traditional construction and earth moving equipment, which would generate noise. Other louder equipment may occasionally be required as well (i.e., helicopters) as noted in **Section 2.4**. Project noise from construction would be an unavoidable, temporary adverse impact, which would be mitigated as discussed in **Section 4.7.3.1**.

Noise disturbances during operation and maintenance, as well as during future decommissioning activities, should be less than, but no greater than those associated with construction. Project noise from those activities would also be an unavoidable, temporary adverse impact, which would also be mitigated in the manner discussed in **Section 4.7.3.1**.

4.7.4.2 Fire

Construction, operation and maintenance, as well as future decommissioning of the Project facilities within the selected ROW, would involve land disturbance to the ROW, which would affect the vegetation in the ROW. Fire danger after transmission line construction, operation and maintenance, and future decommissioning may subside to levels near those prior to pre-construction, although disturbed areas may be subject to an increase in Fire Condition Class 1 to Fire Condition Class 2 if sufficient disturbance remains after any of those activities. Vegetation-disturbance-caused changes from Fire Condition Class 1 to Fire Condition Class 2 would be an unavoidable adverse impact.

4.8 PALEONTOLOGY

4.8.1 Indicators and Methods

The analysis of impacts to paleontological resources is based on a Project-specific paleontological resources assessment that included a literature review of known resources within and near the Study Area, and an assessment of the Project using the Society of Vertebrate Paleontology Assessment of the Paleontological Potential of Rock Units, and the PFYC system. The following indicators were considered when analyzing potential impacts to paleontological resources:

- Known paleontological resources
- Proximity to formations with potential to contain paleontological resources

4.8.2 Direct and Indirect Effects by Alternative

4.8.2.1 Impacts Common to All Action Alternatives

The paleontological records search report indicates that there are no known vertebrate fossil localities within one mile of the Project Area and the potential for significant paleontological resources ranges from very low to unknown. The PFYC assessment along with the Paleontological Potential of Rock Units assessment and the literature review suggests potential for significant vertebrate fossils is unlikely for the Project Area.

4.8.2.2 Proposed Action

Construction

Construction within the ROW would include clearing and grading and the excavation for the structure foundations. Grading or shallow excavations in the uppermost layers of soil and younger Quaternary and Tertiary deposits in the Project Area are unlikely to discover significant vertebrate fossils. Following the Bradshaw-Harquahala approved RMP, if vertebrate or noteworthy occurrences of invertebrate or plant fossils are discovered, the user/operator shall suspend all operations that further disturb such materials and immediately contact the authorized officer. Work in the area shall not resume until written authorization to proceed is issued by the authorized officer. Within five working days, the authorized officer shall evaluate the discovery and inform the operator of actions that would be necessary to prevent loss of significant scientific values. Upon verification from the authorized officer that the required mitigation has been completed, the operator shall be allowed to resume operations.

If EPMs and BMPs (**Section 2.4.5**) are implemented, impacts to paleontological resources would be negligible to minor and long-term.

Operations, Maintenance, and Decommissioning

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

4.8.2.3 Alternative 1: Proposed Action with Additional Corridor

Construction

Impacts to paleontological resources would be the same as described for the Proposed Action.

Operations, Maintenance, and Decommissioning

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

4.8.2.4 Alternative 2: ROW South of SR 74

Construction

Impacts to paleontological resources would be the same as described for the Proposed Action.

Operations, Maintenance, and Decommissioning

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

4.8.2.5 Alternative 3: Carefree Highway Route

Construction

Impacts to paleontological resources would be the same as described for the Proposed Action.

Operations, Maintenance, and Decommissioning

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

4.8.2.6 State Trust Land Route Variation Sub-alternative

Sub-alternative

Construction

Under this Sub-alternative, impacts to paleontological resources would be the same as described for the Proposed Action.

Operations, Maintenance, and Decommissioning

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

Primary Segment Common to All Action Alternatives

Construction

Under the Primary Segment, impacts to paleontological resources would be the same as described for the Proposed Action.

Operations, Maintenance, and Decommissioning

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

4.8.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on paleontological resources as

described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to paleontological resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

4.8.3 Mitigation and Residual Effects

Awareness during subsurface excavations in the Project Area is recommended, but monitoring should not be required. Any fossils so discovered should be professionally recovered without impeding development. Any fossils recovered during mitigation should be deposited in a permanent scientific institution (e.g., AZMNH) for the benefit of current and future generations.

No residual effects are anticipated to occur.

4.8.4 Unavoidable Adverse Impacts

No unavoidable adverse impacts would occur.

4.9 RECREATION AND SPECIAL DESIGNATIONS

4.9.1 Indicators and Methods

The following indicators would demonstrate the effect of the Project on recreation and special designations within the Study Area:

- Changes in or limitations to access to recreation or lands with special designations during and after construction
- Changes in recreation use that would not conform to designated ROS settings
- Changes in OHV recreation resources such as miles and types of trails available
- Changes in the quality of recreational experiences

Table 4.9-1 describes the range of aspects of quality, magnitude, and duration of any effects resulting from the Project specific to recreation and special designations.

4.9.2 Direct and Indirect Effects by Alternative

4.9.2.1 Impacts Common to All Action Alternatives

There would not be any effect to lands with special designations under the Proposed Action, any of the Action Alternatives, or the Sub-alternative, thus special designations will not be discussed further in this section. The centerline access route would be an Administrative route, which is intended to prohibit unauthorized recreational use of the ROW and provide BLM the authority to enforce the recreational use decisions.

Table 4.9-1 Description of Recreation and Special Designations Effects Levels

ATTRIBUTE OF EFFECT		DESCRIPTION RELATIVE TO RECREATION AND SPECIAL DESIGNATIONS
Quality	Beneficial	An improvement to recreation or special designations.
	Adverse	A degradation to recreation or special designations.
Magnitude	Negligible	Very little effect on recreation such that although there may be slight modifications to access or a change in the quality of the recreation experience, most users would not be aware of these changes. Lands with special designations may be slightly affected but these effects would not noticeably change the inherent value or management of the special designation. Less than 5 percent of open space/recreation land uses or BLM-designated routes would be affected.
	Minor	Some effect on recreation such that although there may be modifications to access or a change in the quality of the recreation experience, users that notice it would not change how they use the recreation resource. Lands with special designations may be affected and these effects may or may not cause an effect on the inherent value or management of the special designation. Greater than 5 percent but less than 10 percent of open space/recreation land uses or BLM-designated routes would be affected.
	Moderate	An effect on recreation such that modifications to access or a change in the quality of the recreation experience would be noticeable to most users and a user may change how they use the recreation resource. Lands with special designations may be affected and these effects would cause an effect on the inherent value or management of the special designation. Greater than 10 percent but less than 20 percent of open space/recreation land uses or BLM-designated routes would be affected.
	Major	An effect on recreation such that modifications to access or a change in the quality of the recreation experience would be noticeable to all users and would result in the loss of the recreation resource. Lands with special designations would be affected and these effects would cause an effect on the inherent value or management of the special designation. Greater than 20 percent of open space/recreation land uses or BLM-designated routes would be affected.
Duration	Short-term	10 years or less.
	Long-term	More than 10 years.

Construction

Construction-related effects to existing roads within the Project Area would affect the recreational experience of visitors to public lands. While the specific roads affected vary by alternative, relative effects to recreation would be similar for all alternatives. Recreationists traveling within the Project Area on US 60, SR 74, or other primary roads may experience traffic stops and delays during construction in locations where the transmission line would need to be erected across the road. Should heavy equipment associated with construction activities need to be transported during times of heavier traffic, slow-moving vehicles could back up traffic on roadways, resulting in increased travel times. Routes used for construction access that are also used for recreation, such as BLM-designated OHV routes, would temporarily be closed and therefore would temporarily reduce the amount of recreational access in certain areas. These effects would be duplicated to some extent once the 230kV line was installed on the transmission line structures, but the effect would be shorter-term because a large part of the construction - the installation of structures - would already have been completed for the 500kV line.

The portion of the Proposed Action and Action Alternatives east of the Sun Valley Substation with a Rural ROS setting would be within a BLM-designated utility corridor where current recreational use is minimal, compared to the other BLM-managed public lands in the Project Area. Impacts to recreation in this portion of the Project Area would be negligible.

Of the 18 SRPs identified within the Study Area, 10 could be affected by the construction and/or presence of a transmission line under the Proposed Action and Action Alternatives (M. Skordinsky, BLM personal communication, 2012). The SRPs that typically occur within the Study Area include commercial and competitive uses such as organized group events and activities, or vending operations conducted on public lands. The permits can be for one-time events, such as an OHV race or horse ride, or for on-going commercial uses such as jeep tours. Depending on timing of the event and stage of construction, the effects to these uses could include delays in access to an event or on-going commercial use due to construction activities. If the delay during construction activities caused individuals to miss the event or activity, this effect would be major and adverse. Coordination by APS with the land managing agency during construction activities would minimize and/or potentially eliminate these possible impacts.

Operation, Maintenance, and Decommissioning

The presence of a transmission line after construction would not be likely to eliminate the use under a SRP but the quality of, or experience associated with, the event may be compromised. Depending on the extent of the decreased quality to an individual this impact would be negligible to major and adverse. Maintenance activities could result in disturbance to recreationists and would be limited to vehicular traffic associated with routine inspections of the line and traffic and noise resulting from scheduled or unscheduled maintenance as well as periodic trimming and removal of vegetation. Maintenance or repair activities would occur intermittently over the life of the Project; however, the impacts would be short-term as the effects would cease upon completion of the maintenance or repair activity.

Removal of the transmission line upon completion of the Project under the Proposed Action and Action Alternatives would result in relinquishing the ROW. Land previously occupied by the ROW and associated transmission line structures would be available for other land uses and the effect to the recreation experience due to the infrastructure would be removed.

4.9.2.2 Proposed Action

Construction

Recreation Access

The Proposed Action may result in construction-related delays in recreationist access to public lands along SR 74. Castle Hot Springs Road and Christian Church Camp (Church) Road would be crossed by the ROW, and may be closed for short periods of time or experience traffic stops and delays due to construction. The Proposed Action would also result in the temporary decrease in access to some of the dispersed recreation in the area north of SR 74 due to the closure of trails and roads used for construction, including routes designated for OHV use (two-track and single track) by the BLM. Access to the Castle Hot Springs SRMA and the Hieroglyphic Mountains RMZ, Sheep Mountain RMZ, and the Baldy Mountain RMZ within this SRMA on two-track and single track routes would be temporarily restricted during construction (analyzed in detail below).

There would be a short-term major impact on dispersed recreation access, especially for OHV use. However, once the construction activities were completed on this portion of the route the access would be restored. Recreation access that does not depend on these access routes, such as hiking, would not be affected. Further detail related to effects to OHV use is provided below.

Recreation Opportunity Spectrum

The Proposed Action would cross BLM-managed public lands classified as Rural on the BLM's ROS south of SR 74. This setting is characterized by a substantially modified natural environment where resource modification, development, and use are obvious. While the BLM-managed public land south of SR 74 with a Rural ROS setting are within the Castle Hot Springs SRMA and are open to recreation, the recreational use of this area is less than that portion of the SRMA north of SR 74; there are fewer designated OHV routes. The presence of people, equipment, and related noise and activity during construction of the Project would result in a moderate, short-term impact to lands adjacent to the Project in this ROS classification and comply with the Rural ROS setting.

The Proposed Action route would cross lands north of SR 74 identified as Roaded Natural. The Roaded Natural setting buffers 0.5-mile either side of maintained roads. While these areas are mostly natural in appearance, some human modifications are evident. The Proposed Action route would cross Castle Hot Springs Road and Christian Church Camp (Church) Road approximately 0.75-mile west of Castle Hot Springs Road, both of which are buffered by the Roaded Natural setting. The entire Proposed Action ROW on BLM-managed public lands north of SR 74 would be within the Roaded Natural setting. The primary recreational use within this setting is OHV operation.

The presence of people, equipment, and related noise and activity during construction activities of the Project would result in a moderate short-term impact to lands within and adjacent in each of the ROS settings crossed by the Project. Visitors to these areas may experience higher than normal levels of activity, noise, and interaction with others, potentially to an extent that the assigned ROS settings are exceeded temporarily.

SRMAs

The Proposed Action would cross the southernmost end of the Castle Hot Springs SRMA, both north and south of SR 74, but would not cross the Hieroglyphic Mountains RMZ, Sheep Mountain RMZ, or the Baldy Mountain RMZ located within this SRMA. Construction of the Project would temporarily decrease dispersed recreation access (both motorized and non-motorized) into and within this portion of the SRMA on trails proposed to be used for construction access roads. This effect is discussed further under Recreation Access, above.

Parks and Community Open Space

Lake Pleasant Regional Park is the closest regional park to the Project. The park's southern-most boundary would be adjacent to the transmission line under the Proposed Action. During construction activities, visitors to this park could observe workers and hear noise impacts. As the construction activities got farther away from the park, impacts would be reduced and eventually eliminated. These impacts are expected to be short-term and negligible to minor.

OHV Recreation

As described in **Chapter 3**, The Boulders Staging Area and the Hieroglyphic Mountains are very popular and heavily used recreation resources; an important part of the OHV recreation resources of Maricopa County. Given the limited number of areas for OHV recreation in Maricopa County, impacts to OHV recreation at The Boulders Staging Area and the Hieroglyphic Mountains would impact a sizeable portion of the recreating public from Maricopa County.

The main short-term impact related to OHV recreational use would be decreased OHV trail availability during construction. Approximately 1.4 miles of two-track BLM OHV routes may be used as temporary access roads and would be closed during construction. **Figure 4.9-1** shows the potential routes that may be used for construction access; actual routes approved for use by the BLM would be determined through the development of a Construction Access Plan. OHV users would temporarily have decreased access into the Castle Rock Springs SRMA and the RMZs within it. The potentially impacted routes (should they all be used for construction access) would represent disturbance to approximately three percent of two-track trail in the Study Area.

Impacted routes would be opened again after construction. The overall impact of construction on OHV recreation within the Castle Hot Springs SRMA and RMZs would be minor to moderate. The centerline access route would be an Administrative route, which is intended to prohibit unauthorized recreational use of the ROW and provide BLM the authority to enforce the recreational use decisions.

Other Recreation

The presence of construction equipment, noise, and increased activity would have a short-term minor impact on non-motorized recreation, such as hiking, hunting, and horseback riding, as the affected area already experiences impacts from noise and activity associated with OHV recreation. While wildlife may be acclimated to the routine operation of OHVs in the SRMA, the introduction of construction equipment and activity may disrupt wildlife and have a slightly greater impact on any potential for hunting.

Operation, Maintenance, and Decommissioning

Recreation Opportunity Spectrum

The presence of a transmission line would be an obvious modification to the natural environment; it would be a modification that would affect the recreation experience on lands located immediately adjacent to the Project. Users who consistently recreate in this area may become accustomed to the presence of a transmission line, but the recreation experience would be permanently altered. There would be a minor long-term impact after the transmission line was constructed.

Recreationists would be accessing OHV trails in the Roaded Natural areas. The addition of the transmission line and centerline access within the ROW would make human modifications evident. Because centerline access along the ROW for recreation would not be allowed, contact between recreationists would be expected to remain low to moderate. When recreationists are not in the immediate vicinity of the transmission line in areas where the transmission line would dominate the view (see the visual resources impacts analysis in **Section 4.14**), they would continue to experience a high degree of interaction with the natural environment. The effect to the Roaded Natural lands would be long-term and minor. Both the Rural and Roaded Natural settings would continue to be appropriate with the addition of the Proposed Action.

SRMAs

The Bradshaw-Harquahala RMP (BLM 2010a) includes Desired Future Conditions for the Castle Hot Springs SRMA that include preserving open space and scenic and visual qualities. The Project would occupy a very small portion of the SRMA adjacent to SR74 that is heavily used for OHV recreation (see analysis below), but is also used for non-motorized recreation such as hiking, hunting, and horseback riding. The presence of a transmission line would conflict with this management goal and have a major long-term impact on recreation in portions of the SRMA where the transmission line would dominate the view (see the visual resources impacts analysis in **Section 4.14**) and the ROW cleared of certain vegetation species would be distinctly different from its surroundings; however, the impact would diminish with distance from and reduced visibility of the line and ROW.

Parks and Community Open Space

Visitors that are entering Lake Pleasant Regional Park on Castle Hot Springs Road from westbound SR74 would see the transmission line paralleling the south side of SR 74, potentially resulting in a brief dominating effect on the visual quality at certain points (see **Section 4.14**). With the exception of brief intermittent views of the transmission line in the

distance from the park, there would not be an impact to recreation or to this regional park from the Proposed Action.

Under the Proposed Action, approximately three acres of land proposed to be maintained for open space in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008a; Town of Buckeye 2008) (see **Section 4.6**) would be instead utilized for transmission line structures and centerline access. This represents less than one percent of designated future open space within the Study Area and would be a negligible impact.

OHV Recreation

As discussed in **Section 3.9.3.2**, the SCORP is Arizona's outdoor recreation policy plan, and the BLM participated in developing the plan. The plan establishes outdoor recreation priorities that help resource managers at all levels of government make decisions about the state's outdoor recreation through issue identification and by establishing goals and action strategies. The SCORP sought to plan for recreation to meet future demand of rapidly expanding communities and a need to plan for desired amenities such as recreation and open space. Part of the attraction of the area north of SR 74 for future residential development is its proximity to open space and recreation resources that the BLM-managed public lands offer. The Bradshaw-Harquahala RMP planning process likewise prescribed for this area containing the proposed utility corridor as part of the Castle Hot Springs SRMA, which are areas of intensive recreational use. Amending the RMP to establish a single-use utility corridor north of SR 74 and changing the VRM classes could adversely impact the recreation experience for some OHV recreational users as described below.

West-bound travelers on SR 74 in route to The Boulders Staging Area would see the transmission line paralleling first the south and then the north side of SR 74, passing under the two crossings. The visible presence of the transmission line along SR 74 to The Boulders Staging Area could impact recreationists' impression of the area.

Following the construction activities, the presence of centerline access along the ROW could also permanently change the OHV use patterns in the area. Public recreational use of the centerline access route would not be authorized. The centerline access would be gated at points intersecting roads providing access for four-wheel OHV, and fencing would be installed between the gate and the nearest natural barrier to deter access; however, four-wheel OHV use may not be entirely preventable on the centerline access. Should four-wheel OHVs gain access to the centerline route, this would result in an increased chance for user-defined (unauthorized) trails in the surrounding area, air quality effects due to increased dust, damage to soils, vegetation, and wildlife habitat; and user conflicts. An increase in user-defined trails would conflict with the BLM's management strategy for the area and would create challenges for managing the natural resources and increase user-conflicts. Unabated, this could represent a long-term moderate to major impact to recreation resources within the Project Area. However, the centerline access route would be designated and signed as an Administrative road that would not be open for recreational use, and as such, any unauthorized use of the road would be enforceable by the BLM. Increased BLM patrols and APS monitoring of the centerline route during routine operations would enable regular enforcement. Together these measures would reduce the overall impact of the centerline access on OHV recreation to minor.

Single-track OHV use of the area north of SR 74 would continue. Single-track trails would intersect the centerline access (**Figure 4.9-1**), and single-track recreationists would be permitted to cross the centerline access route and continue along the single-track trails. Single-track trail users would not be permitted to use the centerline access route for recreation; however, gating and fencing the centerline access route at each intersection with the single-track trails to prohibit single-track users from recreationally using the centerline access route would not be feasible. The centerline access would not provide an attractive recreation experience for motorcycles using the single-tracks, and they would not be anticipated to routinely use it. BLM studies of OHV recreation found that motorcycles produce approximately 10 percent of the dust that four-wheel OHVs produce (pers. comm. T. Bickauskas August 3, 2012). Adverse impacts from motorcycles intersecting the centerline access would be negligible to minor. Because single-track recreationists would be permitted to cross the centerline access and continue on the single-track trails, there would be no loss of single-track trail recreation.

Despite the fact that many OHV trails are in relatively close proximity to SR 74, in many cases, the highway is not visible and the area surrounding the trails feels very natural. The cleared ROW and the transmission line would be visible in certain areas and would affect the natural feel of the area, and have a major adverse impact on the recreation experience for the OHV recreationists in relatively close proximity to the ROW. However, effect on the recreational experience would diminish with distance from the ROW, and the recreation experience in large portions of the area where OHV recreation occurs would be minimally affected by distant views of the transmission line.

The southern portion of the SRMA in closer proximity to The Boulders Staging Area and SR 74 are more attractive for casual riders. Modifications to this area from the Project would disproportionately adversely impact the casual riding group, as those seeking a more challenging experience could avoid this area and concentrate use further north.

As described in **Section 3.9.5.1**, not all OHV routes used for recreation were identified in the route evaluation process. Routes currently being used for recreation may be impacted in ways that cannot be evaluated with the information available. The presence of the centerline access and associated plan to prohibit recreational use of the centerline access may require more extensive management of other existing routes by the BLM, which could be a substantial undertaking by BLM management.

Other Recreation

The Project would not affect existing target shooting opportunities on BLM-managed public lands because the area that would be contained within the proposed ROW is not an existing target shooting area. While the centerline access would be closed to recreational use, it would be an attractive area for target shooting due to removal of vegetation within the ROW, and may lead to unauthorized access into the area if techniques used to prevent access are not thorough. Prohibition of recreational use of the centerline access route would be enforced by the BLM as the centerline access route would be designated an Administrative route. The presence of the transmission line would affect the non-motorized recreation experience such as hiking, hunting, and horseback riding mainly visually, but also by noise created by the transmission line, reducing the sense of naturalness and solitude when recreationists would

be near the ROW. However, this effect would be offset by the routine noise created by OHV recreationists in the area. Overall long-term impacts to other recreation would be minor.

Approximately 7.5 miles of the Proposed Action route would cross lands identified for future recreation in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008a; Town of Buckeye 2008) (see **Section 4.6**). Because the nature of future recreational development is unknown, this is a negligible effect. Approximately 20 acres of land that would be used for recreation would be permanently used by transmission line structures and an access road. This represents less than one percent of designated future parks/recreation land within the Study Area and is a negligible effect.

4.9.2.3 Alternative 1: Proposed Action with Additional Corridor

Alternative 1 would establish a multiuse utility corridor on BLM-managed public land north and south of SR 74. Identifying effects to recreation and special designations that would result from future linear ROWs is beyond the scope of this analysis and are considered under Cumulative Impacts in **Section 4.19.10**. Therefore, the impacts to recreation under Alternative 1 would be the same as those under the Proposed Action.

4.9.2.4 Alternative 2: ROW South of SR 74

Construction

Recreation Access

Impacts to recreation access under Alternative 2 would be similar to those described for the Proposed Action. However, the amount of BLM-managed public lands used for recreation that would be affected under Alternative 2 would be significantly less than the Proposed Action. Also, the affected lands south of SR 74, while still part of the SRMA, are less heavily used than those north of SR 74. The impact to recreation access under Alternative 2 would be minor.

Recreation Opportunity Spectrum

Similar to the Proposed Action, Alternative 2 would impact BLM-managed public lands within lands south of SR 74, which have a ROS setting of Rural. There would be no impact to Semi-Primitive Motorized or Roaded Natural ROS settings under Alternative 2.While more acres of land with this ROS setting south of SR 74 would be impacted under Alternative 2, the type and intensity of impacts to these areas under Alternative 2 would be the same as described under the Proposed Action. Lands in the Rural ROS setting are characterized by a substantially modified natural environment. The presence of people, equipment, and related noise and activity during construction activities of the Project would result in a negligible to minor short-term impact. Visitors to these areas may experience higher than normal levels of activity, noise, and interaction with others, at a level that could be expected within the assigned Rural ROS setting.

SRMAs

The Proposed Action would cross the southernmost end of the Castle Hot Springs SRMA, south of SR 74. Construction of the Project would temporarily decrease dispersed recreation

access into and within the portion of the SRMA south of SR 74, on trails proposed to be used for construction access roads. This effect is discussed further under Recreation Access, above. Impacts to non-motorized recreation would be similar to those described under the Proposed Action.

Parks and Community Open Space

The transmission line would have the same or similar temporary construction impacts and long-term visual impacts to Lake Pleasant Regional Park under Alternative 2 as the Proposed Action.

OHV Recreation

The kinds of impacts to OHV recreation under Alternative 2 would be similar in nature to those described for the Proposed Action. However, there are no single-track routes south of SR 74. Under Alternative 2, OHV recreation resources north of SR 74 and The Boulders Staging Area would not be affected. Approximately 0.3 mile of two-track BLM OHV routes would be used as temporary access roads and would be closed during construction activities under Alternative 2. OHV users would temporarily have decreased access into the portion of Castle Rock Springs SRMA south of SR 74, resulting in a negligible short-term impact.

Operations, Maintenance, and Decommissioning

Recreation Opportunity Spectrum

The presence of a transmission line would be an obvious modification to the natural environment; it would be a modification that would affect the recreation experience on lands located immediately adjacent to the Project. Users who consistently recreate in this area may become accustomed to the presence of a transmission line, but the recreation experience would be permanently altered. There would be a minor long-term impact after the transmission line was constructed.

Recreationists would be accessing OHV trails in the Rural areas. The addition of the transmission line and centerline access within the ROW would make human modifications evident. Because centerline access along the ROW for recreation would not be allowed, contact between recreationists would be expected to remain fairly low, mainly due to the limited use the area receives. When recreationists are not in the immediate vicinity of the transmission line in areas where the transmission line would dominate the view (see the visual resources impacts analysis in **Section 4.14**), they would continue to experience a high degree of interaction with the natural environment. The effect to the Rural lands would be long-term and negligible. The Rural setting would continue to be appropriate with the addition of the transmission line. There would be no impact to Semi-Primitive Motorized or Roaded Natural ROS settings under Alternative 2.

SRMAs

The Bradshaw-Harquahala RMP (BLM 2010a) includes Desired Future Conditions for the Castle Hot Springs SRMA that include preserving open space and scenic and visual qualities. Under Alternative 2, the Project would occupy a very small portion of the SRMA on the south side of SR74 that is lightly used for OHV recreation (see analysis below). The presence of a transmission line would somewhat conflict with this management goal and have a major

long-term impact on recreation in portions of the SRMA where the transmission line would dominate the view (see the visual resources impacts analysis in **Section 4.14**); however, the impact would diminish with distance from and reduced visibility of the line. Impacts to non-motorized recreation would be similar to those described under the Proposed Action.

Parks and Community Open Space

The transmission line would have the same or similar long-term visual impacts to Lake Pleasant Regional Park under Alternative 2 as the Proposed Action.

Under Alternative 2, approximately three acres of land proposed to be maintained for open space in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008a; Town of Buckeye 2008) (see **Section 4.6**) would be instead utilized for transmission line structures and a permanent access road. This represents less than one percent of designated future open space within the Study Area and is a negligible effect.

OHV Recreation

The kinds of impacts to OHV recreation under Alternative 2 would be similar in nature to those described for the Proposed Action. However, there are no single-track routes south of SR 74. Under Alternative 2, OHV recreation resources north of SR 74 and The Boulders Staging Area would not be affected. Similar to the Proposed Action, recreation on the centerline access would not be allowed. Gates would be installed in locations where existing OHV routes intersect the centerline access to prevent recreational access and still allow for OHV recreational use south of the Alternative 2 ROW. The impacted routes represent less than one percent of the inventoried two-track trails in the Study Area. Impacts to trails that are used, but are not managed as a part of the trails inventory are possible, but the extent and intensity of these impacts are unknown. The overall impact to OHV recreation under Alternative 2 would be negligible.

Other Recreation

No impacts to or from target shooting on BLM-managed public lands would be expected under Alternative 2.

Approximately 3.4 miles of the Alternative 2 route would cross lands identified for future recreation development in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008b; Town of Buckeye 2008) (see **Section 4.6**). Approximately 9 acres of land that would be used for parks or recreation would be permanently used by transmission line structures and an access road. This represents less than 1 percent of designated future parks/recreation land within the Study Area and is a negligible effect. A portion of these lands are planned for future use as a golf course or open space. Presence of the transmission line may limit the ability of the area for future golf course development and, depending on the relationship of the ROW to the overall golf course development, impacts could range from minor to major.

4.9.2.5 Alternative 3: Carefree Highway Route

Alternative 3 would not include impacts to recreation access, as the access issues discussed under the Proposed Action and Alternative 2 relate to BLM-managed public lands within the SRMA north and south of SR 74. Alternative 3 also would not include impacts to the Castle

Hot Spring SRMA or related OHV use or management because the SRMA containing areas heavily used for OHV recreation would not be crossed by the Alternative 3 route, and OHV recreation is not authorized on State Trust lands south of SR 74.

Construction

Recreation Opportunity Spectrum

The only BLM-managed public lands affected by Alternative 3 would be within the BLM-designated utility corridor near the Sun Valley Substation; impacts are discussed under **Section 4.9.2.1**. There would be no impact to Semi-Primitive Motorized or Roaded Natural ROS settings under Alternative 3.

Parks and Community Open Space

Because of the distance between the Project and Lake Pleasant Regional Park, there would be no construction impacts to Lake Pleasant Regional Park under Alternative 3 (see **Section 4.14**).

Operations, Maintenance, and Decommissioning

Recreation Opportunity Spectrum

The only BLM-managed public lands affected by Alternative 3 would be within the BLM-designated utility corridor near the Sun Valley Substation; impacts are discussed under **Section 4.9.2.1**. There would be no impact to Semi-Primitive Motorized or Roaded Natural ROS settings under Alternative 3.

Parks and Community Open Space

There would be minimal visual impacts to Lake Pleasant Regional Park under Alternative 3 (see **Section 4.14**). The number of structures visible within the park would be similar to the Proposed Action and Alternative 2; however, they would be further way and likely less noticeable. Impacts to recreation would be negligible.

Under Alternative 3, approximately three acres of land proposed to be maintained for open space in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008a; Town of Buckeye 2008) (see **Section 4.6**) would be instead utilized for transmission line structures and a permanent access road. This represents less than one percent of designated future open space within the Study Area and is a negligible effect.

Other Recreation

No impacts to or from target shooting on BLM-managed public lands would be expected under Alternative 3.

Approximately 3.4 miles of the alternative would cross lands identified for future recreation development in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008; Town of Buckeye 2008) (see **Section 4.6**). Approximately 10 acres of land that would be used for recreation would be permanently used by transmission line structures and an access road. This represents less than one percent of designated future parks/recreation land within the Study Area and is a negligible effect.

Alternative 3 would also cross 0.4-mile of land identified for future golf course development within the jurisdiction of the City of Peoria (City of Peoria 2010). The presence of a transmission line could potentially conflict with this recreational future land use; depending on the relationship of the ROW to the overall golf course development, impacts could range from minor to major.

4.9.2.6 Sub-alternative: State Trust Land Route Variation

The four-mile long Sub-alternative route would replace the Primary Segment, a four-mile section of the Proposed Action route that would also be common to all Action Alternatives. The route would cross State Trust land used for grazing. While the State Trust lands are undeveloped and may be used for recreation at some unknown level, they are not managed for recreation uses; therefore, construction, operations, maintenance, and decommissioning under the Sub-alternative would not result in any impacts to recreation.

4.9.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on recreation and special designations as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to recreation resources and special designations located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

4.9.3 Mitigation and Residual Effects

The following mitigation measures would apply to BLM-managed public lands only:

- The BLM would not approve the use of any single-track routes for construction access. The BLM would work with APS to develop a Construction Access Plan that would strictly limit construction access and operation of construction equipment to specific routes.
- The BLM would designate the centerline access route as an Administrative Access Route under the authority of 43 CFR 8342, limiting use to BLM authorized use only. Prohibition of recreational use of the centerline access route (except for single-track trail crossing of the centerline access) and speed limits would be enforced by BLM. Appropriate signs would be installed.
- The BLM would require that all four-wheel OHV roads/trails accessed from SR 74, intersecting the ROW (for example, at Christian Church Camp (Church) Road), be gated along the ROW with associated fencing to a natural barrier, to prevent unauthorized four-wheel OHV use along the centerline access.

- APS' ROW authorization would require monitoring the centerline access route for unauthorized recreational use. APS would monitor the condition of the centerline access route and all gated ROW access points in conjunction with other Project monitoring, and provide reports of the conditions to BLM. During the course of routine field work in this area, BLM resource and law enforcement staff would monitor conditions within the ROW for unauthorized access and use. Should gates/fencing be breached or determined to be ineffective, APS would work with the BLM to undertake additional reasonable and practicable steps to prohibit access and mitigate for adverse impacts resulting from unauthorized access.
- APS would fund additional long-term monitoring of the ROW (three to five years) by the BLM or other cooperating entities for unauthorized recreation and associated impacts.
- APS would work with the BLM to collect necessary data (such as cultural surveys) to facilitate transportation planning, including future OHV recreation planning and management, on specific trails in the area north of SR 74.
- As a result, after mitigation there would be no residual effects to single-track OHV users.

Following the implementation of mitigation measures, the permanent centerline access road and the presence of the transmission line within the ROW could change the OHV use patterns in the area, resulting in the potential for residual effects to occur to a variety of resources within the immediate area as a result of a potential increase in unauthorized user-defined trails not already accounted or planned for.

4.9.4 Unavoidable Adverse Impacts

The permanent centerline access along the ROW would change the OHV use patterns in the area, resulting in an increased chance for user-defined (unauthorized) trails in the surrounding area, air quality effects due to increased dust, damage to soils, vegetation, and wildlife habitat. An increase in user-defined trails would conflict with the BLM's management strategy for the area and would create challenges for managing the natural resources and increase user-conflicts. This represents a long-term moderate impact to recreation in the area that would be unavoidable and adverse.

Alternative 3 would cross 0.4-mile of land identified for future golf course development within the jurisdiction of the City of Peoria (City of Peoria 2010). The presence of a transmission line could conflict with this recreational use and if so, would be unavoidable and adverse.

4.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.10.1 Indicators and Methods

This section contains an analysis of the potential socioeconomic impacts associated with the construction and maintenance of the Project within the Study Area. When possible, these impacts are quantified. Where quantification of impacts is not possible, the analysis provides

a qualitative discussion of the potential effects. The analysis considers impacts to Maricopa County and, to the extent possible, specific communities within the Study Area.

4.10.1.1 Indicators

Socioeconomics

The following indicators demonstrate the social and economic effects of the Project within the Study Area:

Social Values

- Effects to employment
- Effects to population and housing

Market Values

- Economic impacts of construction spending on local employment and incomes
- Economic effects of operating and maintaining the transmission line
- Effects on developed property values and undeveloped land property values. For purposes of this analysis, the term "developed property" is defined to mean property that has been developed for residential, commercial, recreation, or other uses and contains the required infrastructures for those uses. This definition also includes all the required infrastructure needed for lots to be home sites and are marketed as such, including things such as roads and utilities. The term "undeveloped land" is defined to mean land that does not have existing residential or commercial buildings, facilities, or uses. Undeveloped land generally refers to private lands that are part of a master planned community that is not yet fully developed to include residential or commercial facilities or uses, and may be in varying stages of planning or preparation for development. Lands that are not developed property or undeveloped land would be part of the natural landscape and are not presently planned for development.
- Effects on property taxes
- Effects on State Trust land values and revenues
- Effects on recreation

Nonmarket Values

- Effects on recreation values
- Effects to natural amenities and quality of life
- Health and safety concerns

Environmental Justice

The criteria used to determine whether the Project may potentially result in impacts related to EJ is the assessment of whether the potential environmental impacts attributable to the Project would fall disproportionately on the low-income or minority populations. For the Sun Valley to Morgan transmission line Project, indicators would be those conditions indicating a

disproportionate impact to the EJ community (defined in **Section 3.10.9.3**, and shown on **Figure 3.10-1)**.

- Proximity of private property to the ROW
- Proximity of residences to the ROW

Effects to Natural Amenities and Quality of Life includes impacts to visual resources. KOP 3 is located along US 60 looking northwest, and is near the boundary of the EJ community. However, the views from KOP 3 would be those experienced by north bound travelers on US 60, and would not represent the views of residents or property owners within the EJ community. There are no other KOPs within the EJ community; therefore, a determination of disproportionate impacts to natural amenities, such as visual resources, cannot be made.

4.10.1.2 Methods

Socioeconomics

Market Values

Construction Spending Impact Analysis

The economic impacts of the construction phase of the Project were estimated using an input-output model, specifically the IMPLAN modeling software and databases (Minnesota IMPLAN Group 2009). These types of regional economic models are standard approaches to measuring linkages between businesses, households, and institutions and providing an estimate of the multiplier effects that are associated with a direct stimulus or investment.

Maricopa County was selected as the economic Study Area because construction employees and supporting industries are most likely to reside within Maricopa County given the concentration of available workforce and suppliers. IMPLAN multipliers are the sum of direct, indirect, and induced effects divided by the direct impacts. These impact types are defined below:

> **Direct Impacts:** The initial investment or spending within a geographic region is defined as the direct effect. During the construction phase, the direct effects include construction employment and local spending for construction-related services, supplies, and materials.
>
> **Indirect Impacts:** The inter-industry impacts that measure the economic effects associated with the directly impacted industries selling and purchasing goods and services to and from other industries are the indirect impacts or effects. The indirect impacts associated with construction include industries located in Maricopa County that support the construction activity such as engineering design and architectural services, wholesale, and retail trade purchases.
>
> **Induced Impacts:** The effects of increased consumer and household spending that result from the direct and indirect income changes are the induced impacts.

This analysis estimated the total economic impacts (direct, indirect, and induced) associated with the construction employment, as well as construction purchases for supplies and materials made from businesses in Maricopa County. The effects that were measured include

employment (full-time and part-time jobs), labor income (wages, salaries, and bonuses) paid to these workers, and economic output, also defined as gross sales or revenues of all industries located in Maricopa County.

Effects on Developed Property Values and Undeveloped Land Values

Impacts to property values were estimated based on empirical studies (**Appendix 3A**) that were available at the time of analysis; actual impacts would be situational and would be influenced by local conditions.

Research about property value impacts and transmission lines shows that distance or proximity, and whether or not a property adjoins the ROW or easement is the primary factor that affects values (see **Section 3.10** and **Appendix 3A**). Ultimately, it is those properties in close proximity (within 200 feet) of a transmission line, and those that adjoin the ROW or easement of a transmission line, that results in the most significant negative effect on property value. This is because the health and safety concerns and visual impacts are amplified at a close proximity. Residential properties within 50 feet of a transmission line experience the most negative effect on price, while those 50 to 200 feet from a transmission line experience small negative price effects. Properties that are beyond 200 feet or do not adjoin the ROW or easement do not experience any negative price effects.

Impacts to residential properties located within 200 feet of a transmission line vary considerably depending on location, amenities, housing markets, etc. Generally, single family properties have shown 2.8 percent to 29.0 percent lower values when they are located within 200 feet of a transmission line (**Section 3.10** and **Appendix 3A**). Information distinguishing the effects of proximity to transmission lines between residential and commercial properties is unavailable.

Therefore, the assumptions about the effects of the transmission line on the value of residential property would also apply to commercial property. However, the impacts to property values described here apply to properties with structures such as buildings and homes, not to undeveloped land regardless of the zoning or planned use of that land.

Property value impacts for undeveloped and agricultural land located within 200 feet of a transmission line also vary considerably. Studies on this type of land show value impacts ranging from zero to 34 percent (**Section 3.10** and **Appendix 3A**).

Properties and land located within 200 feet of the proposed transmission line or adjoining the potential ROW were identified by using GIS mapping. This information, in conjunction with the property value and land effect data described here, was used to analyze the potential effects on developed property and undeveloped land values

Effects on State Trust Land Values and Revenues

The acreages of State Trust land that would be affected under the Proposed Action and Action Alternatives were calculated by assigning a 200-foot width to the length of the ROW needed on State Trust lands. The value of State Trust land was estimated based on payments for APS transmission line leases on State Trust lands in close proximity to the Project.

Grazing Revenue

The long-term effects to grazing were estimated based on a calculation provided by the ASLD which uses AUM and the current rate charged for a lease. The AUM is determined by animals per section (640 acres) multiplied by the number of months. The average number of animals per section for grazing lands in the Study Area is three. The current lease rate charged is $2.30 per section (as of December 2011). The lease rate was applied to the number of AUMS affected in the Proposed Action and Action Alternatives as estimated in **Section 4.7**.

Effects on Recreation

Insufficient information exists to estimate the actual level of change in recreation use that may result following implementation of the Proposed Action or Action Alternatives. Predictions of changes in use would be highly speculative. While changes to the availability of recreation opportunity or the perceived quality of the recreation experience may increase use on other public and private land, there is not enough information to estimate the nature or magnitude of such shifts. Consequently, the analysis of recreation impacts for the Proposed Action and Action Alternatives focuses on the change in opportunity and the potential direction of change from the No Action Alternative, but not the size of economic impacts relative to these changes.

Nonmarket Values

While the value of BLM-managed public land in terms of natural amenities, recreational experiences, and scenic beauty exists, it is difficult to quantify. Direction provided in the Land Use Planning Handbook (BLM 2005; Appendix D; pages 6, 7 and 10) suggests the use of benefit transfer to evaluate the effects of these non-market values. In the absence of quantitative information specific to the context of this Final EIS, they are discussed qualitatively, where appropriate, in this section and throughout the Final EIS. These are important considerations alongside market values. Therefore, it is important to consider nonmarket values of BLM-managed public lands alongside potential job and income generation.

The analysis of potential effects on recreation use, natural amenities, and health and safety concerns is based on extensive literature reviews summarized in **Section 3.10**.

Environmental Justice

Proximity of the ROW to Private Undeveloped/Unoccupied Property

Portions of the ROW occurring on or adjoining private property were measured and compared between those areas inside and outside the EJ community.

Proximity of the ROW to Private Developed/Occupied Property

The distance between existing private residences and the ROW was measured both inside and outside the EJ community, recognizing that the greatest impact to private property values occurs to those properties adjoining the ROW.

4.10.2 Direct and Indirect Effects by Alternative

4.10.2.1 Effects Common to All Action Alternatives

Social Values

Employment - Maricopa County is the fourth largest county in the U.S. as measured by population, and has a well-diversified, broad-based economy. Unemployment in the county is 9.1 percent which means there is a plentiful workforce available in the region to accommodate the construction needs of the Project. At the peak of construction in year three, the Project is expected to provide between 758 to 783 jobs. This is less than one tenth of one percent of the estimated 2 million person county-wide labor force. Thus, the workforce needed to design and construct the transmission line is expected to draw from the available labor supply in Maricopa County. The construction of the transmission line would increase employment in Maricopa County during the construction period. These effects on the Maricopa County economy would be beneficial, minor and short-term, ending when the transmission line is complete.

Population and Housing - It is not uncommon for construction workers to commute up to two hours from their homes, so construction workers may live outside the Study Area, but reside within Maricopa County and commute to the job site (Electric Power Research Institute 1982). Because the construction workforce would be drawn from the existing labor supply in the county and commute to the job site rather than relocate, there would likely be no effect on housing in the Study Area. Likewise, if workers commute to the job site from their residences, as anticipated, there would be no effect on housing in the Study Area.

Maintenance of the transmission line would have no impact on employment, population, or housing in the Study Area as the line would be maintained by current APS employees residing in Maricopa County.

Market Value Effects

Along the portion of the route common to all Action Alternatives, near the intersection of Lone Mountain Road and 235th Avenue, there appears to be two residences that would be beyond 200 feet from the transmission line, but the property containing these residences may adjoin the ROW, and the values may be impacted.

4.10.2.2 Socioeconomics

Proposed Action

Market Value Effects

Costs and Technical Information - The estimated construction expenditures associated with the Proposed Action and Action Alternatives are presented in **Table 4.10-1**. The ROW acquisition costs shown in **Table 4.10-1** include the cost of acquiring easements from private owners, and the estimated lease revenue paid to BLM and ASLD. Therefore, all costs of the Project are captured in this analysis.

Table 4.10-1 Construction Cost Estimates

	ROW ACQUISITION COST (MILLION $)	CONSTRUCTION COST (MILLION $)	LABOR/MATERIALS AND EQUIPMENT SPLIT (%) [ESTIMATED]
Proposed Action	23.0	104	35/50/15
Alternative 1	23.0	104	35/50/15
Alternative 2	25.8	101	35/50/15
Alternative 3	28.9	101	35/50/15
Sub-alternative	23.0	104.35	35/50/15

Source: APS 2011b

The Proposed Action would result in a total construction cost of $104 million. ROW acquisition costs are estimated to be $23 million. The construction costs and ROW acquisition costs for Alternatives 2 and 3 differ from the Proposed Action because they (1) require fewer turning structures and (2) involve more private land. The Sub-alternative would cost approximately $350,000 more than the Proposed Action due to the addition of two turning structures.

The duration of the construction period, schedule, and distribution of construction costs as shown in **Table 4.10-1** are the same under all scenarios. An estimated 5 percent of construction costs occur in the first year, 20 percent in the second year, 50 percent in the third year, and 25 percent in the fourth year. On-the-ground construction activities (setting infrastructure and running wire) would be completed over 18 to 22 months. Design, materials ordering, and ROW acquisitions would commence prior to construction, thus extending the Project period to four years.

Economic Impacts of Construction - Under the Proposed Action, a total of $104 million would be spent to build the transmission line, most of which would be spent in Maricopa County. The resultant economic impacts on Maricopa County for each year are shown in **Table 4.10-2**.

The economic impacts of construction spending would occur over a four-year period, peaking in year 3. Approximately $5.2 million would be spent during the first year of the Project. The impacts of these expenditures include 36.5 direct jobs and 41.6 indirect and induced jobs in other businesses located in Maricopa County. Labor income (primarily wages and salaries) associated with these jobs is projected to total $4.2 million. Economic output for Maricopa County businesses would be $10.7 million during the first year.

Table 4.10-2 Economic Impacts of Construction: 2013-2016

	Employment	Labor Income*	Output*
Total Project Spending: $5,200,000			
Direct Effects	36.5	$2,162,257	$5,423,315
Indirect Effects	14.9	$883,229	$2,030,651
Induced Effects	26.7	$1,175,150	$3,280,230
Total 2013 Effects	**78.1**	**$4,220,636**	**$10,734,196**
	Employment	**Labor Income***	**Output***
Total Project Spending: $20,800,000			
Direct Effects	145.9	$8,649,028	$21,693,2529
Indirect Effects	59.6	$3,532,914	$8,122,602
Induced Effects	106.9	$4,700,601	$13,120,921
Total 2014 Effects	**312.3**	**$16,882,544**	**$42,936,783**
	Employment	**Labor Income***	**Output***
Total Project Spending: $52,000,000			
Direct Effects	364.7	$21,622,571	$54,233,148
Indirect Effects	148.9	$8,832,286	$20,306,508
Induced Effects	264.2	$11,751,503	$32,802,303
Total 2015 Effects	**780.9**	**$42,206,360**	**$107,341,958**
	Employment	**Labor Income***	**Output***
Total Project Spending: $26,000,000			
Direct Effects	182.4	$10,811,286	$27,116,574
Indirect Effects	74.5	$4,416,143	$10,153,254
Induced Effects	133.6	$5,875,752	$16,401,151
Total 2016 Effects	**390.4**	**$21,103,108**	**$53,670,979**

* Dollar estimates based upon 2011 values.

The construction-related effects of the Proposed Action peak in 2015, when Project spending totals $52 million and supports nearly 781 workers in Maricopa County. This includes about 365 workers directly affiliated with the Project and 416 jobs created through multiplier effects of Project spending. Labor income would total $42.2 million in 2015 and economic output would increase by $107.3 million. The economic impacts begin to taper in 2016 and would end when the transmission line is completed.

Given the size of the Maricopa County economy, the economic effects of construction would be beneficial, short-term, and minor. Although this analysis is a county-wide assessment of impacts, it is reasonable to assume that some of these temporary benefits could flow to communities within the Study Area.

Economic Effects of Operations, Maintenance, and Decommissioning - After construction, a public safety patrol would be conducted for the Project each year. This annual patrol may be conducted from the air or ground depending on conditions and the existence of residential properties along the utility corridor. If completed by ground, it would take one patrolman

approximately 8 to 16 hours to drive along the transmission line inspecting for hazards to the public. This patrolman is categorized as a Hotstick Lineman at $42 per hour (as of 2011). If patrolled by air, it would take one patrolman plus helicopter fees approximately two hours. This would require the same Hotstick Lineman wage plus $1,200 per hour for helicopter use.

In addition to the annual patrol, there would be an extensive climbing inspection performed every seven years. This inspection would require one Hotstick Crew Foreman ($45 per hour), two Hotstick Lineman ($42 per hour, each person), and one apprentice ($36 per hour). This inspection consists of climbing or setting up with aerial equipment on every structure along the transmission line. All hardware is tightened and an extensive visual inspection would be performed. The crew is able to inspect approximately one mile of line per day. If repairs are needed, they would be addressed during this inspection.

It is anticipated that the transmission line would be maintained by the current number of APS employees in Maricopa County. No additional personnel are anticipated to be needed for this Project at this time. Over time, the centerline access road may deteriorate due to weather conditions and to development of the area and there may be a need to perform minor dirt work (grading, filling) to enable the large equipment to move through the utility corridor. Frequency and cost to maintain access is variable depending on the condition of the access roads and frequency of repairs. No access maintenance cost estimates are included in the impact analysis.

The economic effects of operating and maintaining the transmission line would be beneficial, negligible, and long-term.

Effects on Developed Property Values and Undeveloped Land Values - The ROW for the Proposed Action would cross 4.4 miles of private property that is presently predominantly undeveloped (**Section 4.6**). **Table 4.10-3** provides acreages of private property that would be affected by the Proposed Action.

Table 4.10-3 Private Property that would be Affected by the Proposed Action

PRIVATE PROPERTY AFFECTED	ACREAGE WITHIN THE ROW	ACREAGE WITHIN 200 FEET OF THE TRANSMISSION LINE BUT OUTSIDE THE ROW
Private Property within Planned Developments	86.0	109.5
Private Property outside Planned Developments	21.8	66.0

Portions of this private property are within master planned communities that are in various stages of development, and would eventually contain residential and commercial development (see cumulative impacts analysis in **Section 4.19.11**). There are six planned developments within the Study Area that some portion of the ROW would cross. These include BSNF Commercial, Broadstone Ranch, Festival by Lyle Anderson, Saddleback

Heights, Spurlock Ranch, and Warrick Properties. The acreages and proposed land use type of the acreages in each development that are within the ROW and within 200 feet of the transmission line but outside the ROW are shown in **Table 4.10-4.** A total of 86 acres of planned developments would be within the ROW, and a total of 109.5 acres of planned developments would be within 200 feet of the transmission line but outside the ROW under the Proposed Action.

Presently there are no residential structures within 200 feet of the transmission line along the Proposed Action route; therefore, the proximity and price effects on private residential structures which are discussed in **4.10.1.2** do not apply under current conditions. However, as indicated in **Appendix 3A**, the value of developed properties adjoining transmission line ROWs may be affected; therefore, if a residence is not within 200 feet of the transmission line but is on property adjoining the ROW, the value of that residence may still be affected. There are four residences on the east side of the Thunder Ridge Airpark runway that would be more than 200 feet from the transmission line; should the private property containing these residences adjoin the ROW, there could be adverse impacts to these private property values.

APS would acquire an easement across the private property for the acreage contained within the ROW, and would compensate the land owners for this easement.

It is possible that the value of the undeveloped lands within 200 feet of the transmission line but outside the ROW could be negatively affected by the presence of the transmission line under the Proposed Action. Approximately 101 acres of undeveloped lands within 200 feet of the transmission line but outside the ROW would be within six developments. The potential effects on undeveloped land values range from 0 to -34.0 percent (see **Section 4.10.1.2**) depending on location, available amenities, and current market conditions. The overall effects to land owners from a change in private property valuation resulting from the presence of the transmission line would be situational, and would occur at the time of sale. For a large tract of land within a master planned community where a relatively small proportion of property adjoins the ROW, the adverse impact would be buffered by the value of the overall tract (the impact of the transmission line on the value of the undeveloped adjoining private property would dissipate with distance from the transmission line); however, the reduced value of the overall development due to the impact to the private property value could delay or inhibit the extent of the planned full build-out (i.e., completion of construction of all planned development). For the individual private property owner, who has a lot of existing equity and is trying to sell that property, the adverse impact could be major.

In addition to potential impacts to private property values, the presence of the transmission line would also affect the marketing and sales of the property. For property owners, this delay of sale would affect the owners' ability to liquidate their asset. The effects of delayed sales would be situational, but would be adverse regardless. The impacts to marketing and sales of property would be long-term, with the presence of the transmission line affecting the marketability of the property any time it would be available for sale.

Table 4.10-4 Planned Development Acreages Potentially Affected by the Proposed Action by Land Use Type

NUMBER AND TYPE OF ACRES		BNSF COMMERCIAL	BROADSTONE RANCH	FESTIVAL BY LYLE ANDERSON	SADDLEBACK HEIGHTS	SPURLOCK RANCH	WARRICK PROPERTIES
Park/Open Space	Within ROW	0	0	3.3	0.8	0	0
	Outside ROW	0	0	3.0	0.9	0	0
Golf Course	Within ROW	0	0	0	0	0	0
	Outside ROW	0	0	0	0	0	0
Primary Roads	Within ROW	0	0	0	0	.6	0
	Outside ROW	0	0	0	0	.6	0
Industrial	Within ROW	3.7	0	0	0	0	0
	Outside ROW	4.3	0	0	0	0	0
Commercial	Within ROW	0	0	0	0	2.4	0
	Outside ROW	0	0	0	0	2.4	0
Mixed Use	Within ROW	0	0.2	0	0.5	0	0
	Outside ROW	0	<0.1	0	1.5	0	0
Residential	Within ROW	0	1.3	25.3	0	47.8	0
	Outside ROW	0	<0.1	35.6	0	47.8	4.4
Total	Within ROW	3.7	1.5	28.6	1.3	50.8	0
	Outside ROW	4.3	<0.1	38.6	2.4	50.8	4.4

Effects on Property Taxes - Private land acquired for the Project would change land use patterns and could potentially affect the property taxes paid on this land. Under the Proposed Action and Action Alternatives 1, 2, and 3, APS would obtain easements for ROW on private land. For the lands acquired by the Project, the underlying land owner is responsible for paying any assessed property taxes for Project lands.

The Proposed Action crosses 106.67 acres of private land with an estimated assessed valuation of $3.5 million. The estimated annual property tax revenue generated by these private properties is $289,151 (based on 2011 tax rates). Under the Proposed Action, the presence of a transmission line could negatively affect the assessed value of these lands. A decrease in assessed valuation could result in a decrease in tax revenue.

Offsetting the potential loss of tax revenue would be property taxes paid by APS on the value of installed equipment on the land. According to APS, the tax revenue collected for infrastructure improvements is estimated to total $1,873,700 (based on 2011 tax rates), with the majority of these funds ($1,001,000) going to K-12 school districts. A breakdown of these totals by jurisdiction is provided in **Table 4.10-5**. The amount of tax revenue collected for infrastructure improvements is the same under all Action Alternatives.

The potential increase in tax revenue collected would represent a 648 percent increase over existing property taxes. However, this amount would only be approximately 0.40 percent of the Maricopa County property tax revenue. The change in property taxes collected by Maricopa County under the Proposed Action would be a major increase over the existing taxes collected for private properties that would be crossed by the route, but a minor overall beneficial impact for the taxing entities and the recipients of tax revenue.

These benefits would accrue to taxing entities and the beneficiaries of those taxes.

Table 4.10-5 Estimated Annual Property Tax Revenues from Project Lands by Jurisdiction

JURISDICTION	ESTIMATED REVENUES (IN DOLLARS)	
Arizona		85,000
Maricopa Community College		242,000
Maricopa County		249,000
Maricopa Special Districts		
Library	10,000	
Health Care	20,000	
Fire District Assistance	30,000	
West MEC	8,000	
Central Arizona Project	2,000	
Special District Total		70,000

Table 4.10-5 Estimated Annual Property Tax Revenues from Project Lands by Jurisdiction (Continued)

JURISDICTION	ESTIMATED REVENUES (IN DOLLARS)	
K-12 School Districts		
Deer Valley School District	219,000	
Peoria School District	379,000	
Morristown School District	135,000	
Wickenburg School District	268,000	
K-12 School District Total		1,001,000
Cities		
Peoria	101,000	
Surprise	6,700	
Buckeye	81,000	
Cities Total		188,700
TOTAL PROPERTY TAXES		**1,835,700**

Source: APS 2012

Effects on State Trust Land Values and Revenues - State Trust lands are required for the Proposed Action and Action Alternatives. Characteristics of the State Trust land required for the Proposed Action and Action Alternatives are shown in **Table 4.10-6**.

Table 4.10-6 State Trust Land Characteristics

	LENGTH[1] (MILES)	ACREAGE (ACRES)	VALUE ($)
Proposed Action	22.88	554.6	16,636,363
Alternative 1	22.88	554.6	16,636,363
Alternative 2	23.88	578.8	17,363,636
Alternative 3	25.38	615.2	18,454,545
Sub-alternative	22.88	554.6	16,636,363

Source: APS 2011a

[1] This distance represents the number of Project miles crossing State Trust land.

Under the Proposed Action, a total of 554.6 acres of State Trust land, currently valued at $16.6 million, would be required under the Proposed Action. These lands would be leased to APS and be unavailable for future development or sale. Offsetting the loss of future development would be the lease revenue that APS would pay on State Trust lands to the ASLD. That amount has been estimated by APS and is included in the ROW acquisition costs presented in **Table 4.10-1**. The beneficiaries of revenue generated through leasing of State Trust lands are typically the common schools in the state.

Effects on State Trust Land Grazing - The Proposed Action and Action Alternatives are located along an area with State Trust land sections that are leased for grazing activities and generate revenue for the State Land Trust. Under the Proposed Action, portions of seven allotments would be affected, with a permanent loss of four AUMS (**Section 4.6**). If grazing permit holders could not find alternative grazing options on State Trust land, the potential impact on grazing revenue for the State Land Trust would be an annual loss of $110.40 (at 2011 lease rates). The beneficiaries of revenue generated by grazing activities are common schools in the state.

Effects on Utility Rates – Under the Proposed Action, the rates that APS customers pay for electricity would be increased to recover the cost of investment infrastructure through annual application of the transmission cost adjuster.

Effects on Recreation - The Proposed Action route is located within a region of Arizona with two state parks and abundant open space, providing opportunities for recreational activities such as hiking and wildlife viewing. OHV recreation in the affected area occurs on land managed by BLM and is especially high at the Boulders Staging Area, a developed facility located partly within the Hieroglyphics RMZ.

During construction, the Proposed Action may cause construction-related delays in access to public lands along SR 74 and temporarily limit access to some dispersed recreation for brief periods which could also limit access to OHV trails in the Hieroglyphics RMZ. Recreation access that does not depend on these access routes, such as hiking, would not be affected.

The primary impact related to OHV recreational use would be decreased OHV trail access during short periods when construction limits access to existing trails. Routes used for construction access that are also used for recreation, such as certain BLM-designated OHV routes, would be temporarily closed, temporarily reducing some recreational access in certain areas (**Section 4.9**). If OHV recreationists choose not to recreate at other existing areas available for OHV use in Maricopa County during these short periods when access is limited to specific trails, and reduce the number of times they recreate, the beneficial economic impacts generated by recreation spending that are described in **Section 3.10** could decline. The potential economic effects of recreation spending on the Maricopa County economy would be short-term, the magnitude of which cannot be determined.

The effects of the Proposed Action on OHV recreation during the construction period would also be short-term as access to routes and trails would only be limited during the time construction occurs at specific sites. Most trails and routes would be reopened after construction at that particular site was complete. There is insufficient data to determine the number of OHV users that would forego recreating in the affected area; therefore, the magnitude of these short-terms effects cannot be estimated.

Once the transmission line is installed, it could change the overall feeling of the area to OHV users who might decide to recreate less often in this specific area. In this case, the economic impacts generated by recreation spending could decline (**Section 3.10**). This would be a long-term effect on the Maricopa County economy, the magnitude of which cannot be determined.

Nonmarket Values

Effects on Recreation Values - Because the centerline access route along the ROW would be designated an Administrative route and would not be open to recreational use, there would be no beneficial effects on recreation values from the ROW.

Individuals seeking solitude and primitive recreation experiences would be adversely impacted by the views and noise during construction and by the change in landscape due to the presence of the transmission line.

For all recreationists, the presence of a transmission line would be an obvious modification to the natural environment, affecting the recreation experience on lands immediately adjacent to the Project. After construction, visitation may not change, but the value of the visit may be different. Users who consistently recreate in this area may become accustomed to the presence of a transmission line, but the recreation experience, and the surplus value associated with that experience would be permanently altered (**Section 4.9**). For instance, a pooled sample of all types of OHV users, including all-terrain vehicles, dirt bikes, and dune buggies, showed that the average Arizona net economic value per OHV trip was $68 (Silberman and Andereck 2006). Economic values could be negatively affected by 1.4 to 2.25 percent per trip if access to public lands used for OHV is prohibited or limited for lengthy periods of time.

Although the centerline access route would not be authorized for public access, and it would be designated an Administrative route in order to enforce restrictions on recreational use, some level of unauthorized OHV use could occur on the centerline access road. This would result in an increased chance for user-defined (unauthorized) trails in the surrounding area, a decrease in air quality due to increased dust, and damage to soils, vegetation, and wildlife habitat. An increase in user-defined trails would conflict with the BLM's management strategy for the area and would create challenges for managing the natural resources and increase user-conflicts. This represents a long-term moderate impact to recreation resources of the area.

Potentially, the Proposed Action could affect the quality of the recreation experience on BLM-managed public land that is in close proximity to, and used by future residents of communities that are adjacent to the Project, such as Saddleback Heights.

Effects to Natural Amenities and Quality of Life - Natural amenities are goods and services provided by nature that bring value to human life, but typically lack market prices (e.g., wildlife habitat, scenic views). Natural amenities, such as access to public lands have been shown to influence regional population distribution, employment, and growth. The draw of natural amenities is especially powerful in rural communities where population change and relocation of employers have been strongly related to the attractiveness as a place to live.

The area north of SR 74 would qualify as an open space in a natural setting with very little development, and it is fairly highly valued by survey respondents from Maricopa County (**Section 3.10**). The Project would change that natural setting. Communities closest to the Project might feel that their current rural quality of life would be adversely affected with the presence of a transmission line.

The construction of the transmission line under the Proposed Action would require the removal of some habitat for wildlife and special status species (including Category II and Category III Sonoran desert tortoise habitat), increase noise, cause a decline in air quality, and damage soils and vegetation. Some of these effects would be short-term and temporary, such as soil and vegetation degradation, noise, and air quality and have minor to moderate impacts that end when construction is complete. Other effects, such as the loss of Sonoran desert tortoise habitat and visual obstruction are long-term and permanent.

Visual obstruction to scenic views caused by the transmission line would be permanent and could negatively affect the aesthetics of the surrounding area. Many residents of the developed portions of Vistancia, for example, were concerned that the transmission line would obscure their scenic views despite the fact that the transmission line would be located several miles from existing homes and barely visible.

While the visual effects of the transmission line are section specific and range from weak to moderate, the presence of the transmission line would be a very discordant element in sections where it dominates the view, negatively affecting the "rural scenic expectation" which is important to area residents, commuters, and recreationists (**Section 4.14**).

Current residents that would be closest to the Project might feel that their rural quality of life would be adversely affected with the presence of the transmission line and permanent loss of wildlife habitat. The changes in the natural amenities discussed above could permanently lessen the quality of life experience for some residents living in the Study Area.

Health and Safety Concerns - Scientific studies exploring the connection between exposure to electromagnetic radiation emitted by transmission lines and health hazards are mixed. The 1999 National Institute of Environmental Health Sciences expert group research assessed the health effects of exposure to the EMFs emitted from transmission lines and concluded that evidence is not sufficient to establish a definitive cause and effect relationship. The International Agency for Research on Cancer came to a similar conclusion (Kheifets 2001). However, for some residents in the Study Area, the potential health risks of exposure to EMFs, whether conclusive or not, remains a concern and affects their interest in properties near transmission lines.

Some area homeowners in the developed portion of Vistancia mistakenly believed the Proposed Action and the Action Alternatives would place the transmission line very near their existing dwellings and expressed their health and safety concerns to BLM. However, under the Proposed Action, and all Action Alternatives the transmission line would be several miles distant from the existing Vistancia development.

Section 4.7.2.1 concludes that the impacts from EMF would be an adverse minor long-term impact under all alternatives as EMF levels at the edge of the ROW would be well below the ICNIRP public levels.

Alternative 1: Proposed Action with Additional Corridor

Market Values

Economic Impacts of Construction - The construction costs associated with Alternative 1 are estimated to be $104 million, the same as the Proposed Action. The ROW acquisition cost of

Alternative 1 as well as the construction duration and schedule would be the same as for the Proposed Action.

The annual economic impacts on employment, labor income, and economic output in Maricopa County generated by construction spending in the county are the same as those shown in **Table 4.10-2**, and identified and discussed in the Proposed Action.

Economic Effects of Operations, Maintenance, and Decommissioning - The operation and maintenance of the transmission line under Alternative 1 would be the same as the Proposed Action.

Effects on Developed Property Values and Undeveloped Land Values - The ROW for Alternative 1 would be the same as described under the Proposed Action, crossing 4.4 miles of private land which is predominantly undeveloped (**Section 4.7**). The ROWs under Alternative 1 cross portions of the same planned developments identified under the Proposed Action; therefore, the effects on property values, and the marketing and sale of properties under Alternative 1 would be the same as those described for the Proposed Action.

Effects on Property Taxes - The effects on property taxes under Alternative 1 are the same as those for the Proposed Action because the acres of private land required in Alternative 1 are the same as those required in the Proposed Action.

Effects on State Trust Land Value - The land value effects under Alternative 1 are the same as the Proposed Action because the number acres of State Trust land required in Alternative 1 are the same as those required in the Proposed Action.

Effects on State Trust Land Grazing - Alternative 1 would affect six grazing allotments resulting in the permanent loss of 4 AUMS. If grazing permit holders could not find alternative grazing options on State Trust land, the potential impact on grazing revenue for the State Land Trust would be an annual loss of $110.40 (at 2011 lease rates).

Effects on Utility Rates - The effects on utility rates under Alternative 1 would be the same as those for the Proposed Action because the infrastructure cost would be the same under Alternative 1 as the Proposed Action.

Effects on Recreation - Alternative 1 would establish a multiuse utility corridor on BLM-managed public land north and south of SR 74. BLM would be allowed to consider additional linear ROWs (such as utilities) within the corridor. Identifying effects to recreation and special designations that would result from future linear ROWs is beyond the scope of this analysis. Therefore, the impacts to recreation under Alternative 1 would be the same as those under the Proposed Action for the 200-foot ROW, but additional impacts could result from allowing other utilities to be developed within this 0.5-mile wide corridor. These effects are discussed in cumulative effects, **Section 4.19**.

Nonmarket Values

Effects on Recreation Values - The nonmarket value effects to recreation under Alternative 1 during construction and operation would be similar in nature to those under the Proposed Action.

Effects to Natural Amenities and Quality of Life - Changes to natural amenities and quality of life under Alternative 1 are similar to those of the Proposed Action.

Health and Safety Concerns - The health and safety concerns under Alternate 1 are the same as those identified under the Proposed Action.

Alternative 2: ROW South of SR 74

Because the Alternative 2 route deviates from the ACC route, under Alternative 2 APS would be required to re-engage with the ACC and complete a process for the ACC to issue a new CEC. The processes to obtain a new CEC from the ACC would increase the overall Project cost and delay Project implementation. Delay of implementation could result in the following indirect effects:

- Increased reliability of electrical infrastructure that would be provided by the new 500kV transmission line would be delayed.
- Delay in construction of the 500kV transmission line would delay the capacity to facilitate delivery of electricity from projected renewable energy resources to the Phoenix area, which could in turn delay development of additional renewable energy resources.

Construction of the 230kV transmission line could be delayed, in which case the development of new residential, commercial, and recreational uses in the Town of Buckeye, City of Surprise, City of Peoria, and unincorporated Maricopa County could be delayed.

Market Values

Economic Impacts of Construction - The construction costs associated with Alternative 2 are estimated to be $101 million, approximately $3 million less than the Proposed Action. Alternative 2 requires fewer turning structures which accounts for the difference in cost. The ROW acquisition costs under Alternative 2 are higher than the Proposed Action because more private land is required.

The construction duration and schedule under Alternative 2 would be the same as the Proposed Action. The annual economic impacts on employment, labor income, and output in Maricopa County that would be generated by construction spending in the county are shown in **Table 4.10-7**.

Similar to the Proposed Action, the economic effects of construction-related spending peak in 2015. A total of $50.5 million in construction-related spending would flow into the Maricopa County economy, creating 758 jobs, and generating almost $41 million in labor income and $104.2 million economic output. The impacts would end when the transmission line is completed in 2016.

The economic impacts on Maricopa County resulting from the construction of the transmission line would be slightly less under Alternative 2 than under the Proposed Action because of lower construction costs. However, employment, labor income and economic output would still increase.

Given the size of the Maricopa County economy, the economic effects of construction would be beneficial, short-term, and minor. Although this analysis is a county-wide assessment of impacts, it is reasonable to assume that some of these temporary benefits could flow to communities within the Study Area.

Economic Effects of Operations, Maintenance, and Decommissioning - The operation and maintenance of the transmission line under Alternative 2 would be the same as the Proposed Action. Therefore, the economic effects would be the same as those identified in the Proposed Action.

Table 4.10-7 Economic Impacts of Construction: 2013-2016

	Employment	Labor Income*	Output*
Total Project Spending: $5,050,000			
Direct Effects	35.4	$2,099,884	$5,266,873
Indirect Effects	14.5	$857,751	$1,972,074
Induced Effects	25.9	$1,141,252	$3,185,608
Total 2013 Effects	**75.8**	**$4,098,887**	**$10,424,556**
	Employment	**Labor Income***	**Output***
Total Project Spending: $20,200,000			
Direct Effects	141.7	$8,399,537	$21,067,492
Indirect Effects	57.9	$3,431,003	$7,888,297
Induced Effects	103.8	$4,565,007	$12,742,433
Total 2014 Effects	**303.3**	**$16,395,548**	**$41,698,222**
	Employment	**Labor Income***	**Output***
Total Project Spending: $50,500,000			
Direct Effects	354.2	$20,998,843	$52,668,730
Indirect Effects	144.6	$8,577,508	$19,720,743
Induced Effects	259.5	$11,412,518	$31,856,082
Total 2015 Effects	**758.3**	**$40,988,869**	**$104,245,555**
	Employment	**Labor Income***	**Output***
Total Project Spending: $25,250,000			
Direct Effects	177.1	$10,499,422	$26,334,365
Indirect Effects	72.3	$4,288,754	$9,860,372
Induced Effects	129.7	$5,706,259	$15,928,041
Total 2016 Effects	**379.2**	**$20,494,434**	**$52,122,778**

* Dollar estimates based upon 2011 values.

Effects on Developed Property Values and Undeveloped Land Values - The ROW for Alternative 2 would cross 7.6 miles of private property that is presently predominantly undeveloped (**Section 4.6**). **Table 4.10-8** provides acreages of private property that would be affected by Alternative 2.

Table 4.10-8 Private Property that would be Affected by Alternative 2

PRIVATE PROPERTY AFFECTED	ACREAGE WITHIN THE ROW	ACREAGE WITHIN 200 FEET OF THE TRANSMISSION LINE BUT OUTSIDE THE ROW
Private Property within Planned Developments	161.9	185.4
Private Property outside Planned Developments	21.7	65.9

A total of 161.9 acres of planned developments would be within the ROW, and a total of 185.4 acres of planned developments would be within 200 feet of the transmission line but outside the ROW under Alternative 2.

There are six planned developments within the Study Area that some portion of the 200-foot ROW would cross under Alternative 2. These developments are the same as those identified under the Proposed Action. The acreages and proposed land use types of those acreages are similar to the Proposed Action, with the exception of Saddleback Heights. The acreages and proposed land use type of the acreages in Saddleback Heights that are within the ROW and within 200 feet of the transmission line but outside the ROW are shown in **Table 4.10-9.**

Table 4.10-9 Saddleback Heights Planned Development Acreages Potentially Affected by the Alternative 2 by Land Use Type

NUMBER AND TYPE OF ACRES		SADDLEBACK HEIGHTS
Park/Open Space	Within ROW	12.7
	Outside ROW	13.0
Golf Course	Within ROW	0
	Outside ROW	0
Primary Roads	Within ROW	0
	Outside ROW	0
Industrial	Within ROW	0
	Outside ROW	0
Commercial	Within ROW	0
	Outside ROW	0
Mixed Use	Within ROW	0.2
	Outside ROW	1.2
Residential	Within ROW	64.2
	Outside ROW	64.1
Total	Within ROW	77.3
	Outside ROW	78.3

Presently there are no residential structures within 200 feet of the transmission line along the Alternative 2 route; therefore, the proximity and price effects on private residential structures which are discussed in **4.10.1.2** do not apply under current conditions. However, as indicated in **Appendix 3A**, the value of developed properties adjoining transmission line ROWs may be affected; therefore, if a residence is not within 200 feet of the transmission line but is on property adjoining the ROW, the value of that residence may be affected. There are four residences on the east side of the Thunder Ridge Airpark runway that would be more than 200 feet from the transmission line; should the private property containing these residences adjoin the ROW, there could be impacts to these private property values.

APS would acquire an easement across the private property for the acreage contained within the ROW, and would compensate the land owners for this easement.

It is possible that the value of the lands within 200 feet of the transmission line but outside the ROW could be negatively affected under Alternative 2 by the presence of the transmission line. Approximately 176 acres of undeveloped lands within 200 feet of the transmission line, but outside the ROW would be within six developments. The potential effects on the undeveloped land values range from 0 to -34.0 percent (see **Section 4.10.1.2**) depending on location, available amenities, and current market conditions. Overall impacts to private property values would be situational as described for the Proposed Action. However, the Alternative 2 route would involve more private property than the Proposed Action; therefore the adverse impacts would be more extensive.

Impacts of the presence of the transmission line on the marketing and sales of private property would be the same as described for the Proposed Action.

Effects on Property Taxes - Alternative 2 crosses 184.2 acres of private land. This property has an estimated assessed valuation of $7.57 million and generates an estimated $624,799 in property tax revenue annually (based on 2011 tax rates).

The offsetting effects of these potential impacts are the same as those described under the Proposed Action. APS would pay a property tax on the value of installed equipment on the land totaling $1,835,700. Most of this revenue would flow to common schools in the state.

The potential increase in tax revenue collected would represent a 294 percent increase over existing property taxes. However, this amount would only be approximately 0.40 percent of the Maricopa County property tax revenue. The change in property taxes collected by Maricopa County under the Proposed Action would be a major increase over the existing taxes collected for private properties that would be crossed by the route, but a minor overall beneficial impact for the taxing entities and the recipients of tax revenue.

Effects on State Trust Land Values and Revenues - A total of 578.8 acres of State Trust land would be required under Alternative 2. The value of this land is estimated to be almost $17.4 million, slightly more than under than the Proposed Action. These lands would be leased to APS and removed from future development or sale.

Offsetting the loss of future development would be the lease revenue that APS would pay annually on State Trust lands to the ASLD. That amount has been estimated by APS and is included in the ROW acquisition costs for Alternative 2 shown in **Table 4.10-1**. The

beneficiaries of revenue generated through leasing of State Trust lands are typically the common schools in the state.

Effects on State Trust Land Grazing - Under Alternative 2, portions of six allotments would be affected, with a permanent loss of three AUMS (**Section 4.6**). If grazing permit holders could not find alternative options on State Trust land, the potential impact on grazing revenue for the State Land Trust would be a loss of $82.80 (at 2011 lease rates). Under Alternative 2, the effects to State Trust land grazing revenue would be negligible and long-term.

Effects on Utility Rates – Under Alternative 2, the rates that APS customers pay for electricity would be increased to recover the cost of investment infrastructure through annual application of the transmission cost adjuster. Under Alternative 2, the estimated cost of construction would be approximately the same as the Proposed Action.

Effects on Recreation - Under Alternative 2, the portion of the Study Area that receives the most OHV recreation would not be affected during the construction or operation phases of the Project. Less than one mile of two-track routes would be closed for short periods during construction which would limit OHV access into the Castle Hot Springs SRMA (**Section 4.9**). The quality of the recreation experience on BLM-managed public land and access to trails from the Boulders Staging Area would remain unchanged. Likewise, there would be no impact on recreation spending, so the economic impacts generated by that spending would also remain unchanged. There would be no impact to Semi-Primitive Motorized or Roaded Natural ROS settings under Alternative 2. The impacts to OHV recreation under Alternative 2 would be negligible.

Nonmarket Values

Effects on Recreation Values - Alternative 2 involves less BLM-managed public land and the land that is affected is less heavily used than that under the Proposed Action. Under this alternative, the quality of the routes could change, but the OHV use levels of the affected lands are much lower than the OHV area north of SR 74. Therefore, the value of the recreation experience would remain less changed under Alternative 2 than under the Proposed Action.

Effects to Natural Amenities and Quality of Life - The impacts to Natural amenities and quality of life under Alternative 2 would be similar in nature to those under the Proposed Action, with the exception of impacts to Sonoran desert habitat. There would be no Category II Sonoran desert tortoise habitat impacted under Alternative 2, only Category III habitat. Keeping this habitat safe could be viewed by some residents as a positive outcome.

Health and Safety Concerns - The health and safety concerns under Alternative 2 are the same as those identified under the Proposed Action.

Alternative 3: Carefree Highway Route

Because the Alternative 3 route deviates from the ACC route, under Alternative 3 APS would be required to re-engage with the ACC and complete a process for the ACC to issue a new CEC. The processes to obtain a new CEC from the ACC would increase the overall Project cost and delay Project implementation. Delay of implementation could result in the following indirect effects:

- Increased reliability of electrical infrastructure that would be provided by the new 500kV transmission line would be delayed.
- Delay in construction of the 500kV transmission line would delay the capacity to facilitate delivery of electricity from projected renewable energy resources to the Phoenix area, which could in turn delay in development of additional renewable energy resources.

Construction of the 230kV transmission line could be delayed, in which case the development of new residential, commercial, and recreational uses in the Town of Buckeye, City of Surprise, City of Peoria, and unincorporated Maricopa County could be delayed.

Market Values

Economic Impacts of Construction - The construction costs associated with Alternative 3 are estimated to be $101 million, approximately $3 million less than the Proposed Action. Alternative 3 requires fewer turning structures which accounts for the difference in cost. The ROW acquisition costs under Alternative 3 are $28.9 million or $5.9 million higher than Proposed Action because more private land is required. Alternative 3 also requires slightly more State Trust Land than the Proposed Action (25.4 acres), and significantly less BLM-managed public land (72.7 acres).

The construction duration and schedule under Alternative 3 would be the same as the Proposed Action. The annual economic impacts on employment, labor income, and economic output in Maricopa County generated by construction spending in the county are the same as those shown in **Table 4.10-5**.

Economic Effects of Operations, Maintenance, and Decommissioning - The operation and maintenance of the transmission line under Alternative 3 would be the same as the Proposed Action. Therefore, the economic effects would be the same as those identified in the Proposed Action.

Effects on Developed Property and Undeveloped Land Values - The ROW for Alternative 3 crosses 9.3 miles of private land that is presently predominantly undeveloped. **Table 4.10-10** provides acreages of private property that would be affected by Alternative 3.

Table 4.10-10 Private Property that would be Affected by Alternative 3

PRIVATE PROPERTY AFFECTED	ACREAGE WITHIN THE ROW	ACREAGE WITHIN 200 FEET OF THE TRANSMISSION LINE BUT OUTSIDE THE ROW
Private Property within Planned Developments	213.4	237.0
Private Property outside Planned Developments	19.8	64.3

Portions of this private property are part of master planned communities that are in various stages of development, and that would eventually contain residential and commercial development (see cumulative impacts analysis in **Section 4.19.11**). A total of 213.4 acres of planned developments would be within the ROW, and a total of 237 acres of planned developments would be within 200 feet of the transmission line but outside the ROW under Alternative 3. There are eight planned developments within the Study Area that some portion of the ROW would cross under Alternative 3. These include BSNF Commercial, Broadstone Ranch, Festival by Lyle Anderson, Lake Pleasant Heights, Saddleback Heights, Spurlock Ranch, Vistancia, and Warrick Properties, which are in various stages of planning for future development. The acreages and proposed land use types of those acreages that would be affected in each development are shown in **Table 4.10-11**.

Presently there are no residential structures within 200 feet of the transmission line along the Proposed Action route; therefore, the proximity and price effects on private residential structures which are discussed in **Section 4.10.1.2** do not apply under current conditions. However, as indicated in **Appendix 3A**, the value of developed properties adjoining transmission line ROWs may be affected; therefore, if a residence is not within 200 feet of the transmission line but is on property adjoining the ROW, the value of that residence may be affected. There are four residences on the east side of the Thunder Ridge Airpark runway that would be more than 200 feet from the transmission line; should the private property containing these residences adjoin the ROW, there could be impacts to these private property values.

APS would acquire an easement across the private property for the acreage contained within the ROW, and would compensate the land owners for this easement.

It is possible that the value of the lands within 200 feet of the transmission line but outside the ROW could be negatively affected by the presence of the transmission line under Alternative 3. Approximately 229 acres of undeveloped lands within 200 feet of the transmission line but outside the ROW would be within eight developments (**Table 4.10-11**). The potential effects on undeveloped land values range from 0 to -34.0 percent (see **Section 4.10.1.2**) depending on location, available amenities, and current market conditions. Overall impacts to private property values would be situational as described for the Proposed Action. However, the Alternative 3 route would involve more private property than the Proposed Action or Alternative 2; therefore the adverse impacts would be more extensive.

Impacts of the presence of the transmission line on the marketing and sales of private property would be the same as described for the Proposed Action.

Table 4.10-11 Planned Development Acreages Potentially Affected by Alternative 3 by Land Use Type

NUMBER AND TYPE OF ACRES		BNSF COMMERCIAL	BROADSTONE RANCH	FESTIVAL BY LYLE ANDERSON	SADDLEBACK HEIGHTS	SPURLOCK RANCH	WARRICK PROPERTIES
Park/Open Space	Within ROW	0	0	3.3	35.6	0	0
	Outside ROW	0	0	3.0	32.0	0	0
Golf Course	Within ROW	0	0	0	0	0	0
	Outside ROW	0	0	0	0	0	0
Primary Roads	Within ROW	0	0	0	0	0.6	0
	Outside ROW	0	0	0	0	0.6	0
Industrial	Within ROW	3.7	0	0	0	0	0
	Outside ROW	4.3	0	0	0	0	0
Commercial	Within ROW	0	0	0	1.0	2.5	0
	Outside ROW	0	0	0	1.2	2.5	0
Mixed Use	Within ROW	0	0.2	0	0	0	0
	Outside ROW	0	0	0	0	0	0
Residential	Within ROW	0	1.3	25.3	28.3	47.8	0
	Outside ROW	0	0	35.6	25.0	47.8	4.4
Total	Within ROW	3.7	0.2	28.6	64.9	50.8	0
	Outside ROW	4.3	1.3	38.6	58.1	50.8	4.4

Table 4.10-11 Planned Development Acreages Potentially Affected by Alternative 3 by Land Use Type (Continued)

NUMBER AND TYPE OF ACRES		LAKE PLEASANT HEIGHTS	VISTANCIA
Park/Open Space	Within ROW	19.3	7.4
	Outside ROW	13.7	12.7
Golf Course	Within ROW	0	0
	Outside ROW	0	0
Primary Roads	Within ROW	0	0
	Outside ROW	0	0
Industrial	Within ROW	0	0
	Outside ROW	0	0
Commercial	Within ROW	<0.1	3.8
	Outside ROW	0.1	4.1
Mixed Use	Within ROW	0	0
	Outside ROW	0	0
Residential	Within ROW	11.8	17.7
	Outside ROW	12.3	26.7
Undefined	Within ROW	0	1.5
	Outside ROW	0	0.7
Water	Within ROW	2.4	0
	Outside ROW	1.4	0
Total	Within ROW	33.5	30.4
	Outside ROW	27.5	44.3

Effects on Property Taxes - Alternative 3 crosses 225.5 acres of private land with an estimated assessed valuation of $11.0 million. These lands generate $909,151 in property tax revenue (based on 2011 tax rates). The presence of the transmission line could negatively affect the assessed value of these lands. A decrease in assessed valuation might result in decrease tax revenue.

The offsetting effects of these potential impacts are the same as those described under the Proposed Action. APS would pay a property tax on the value of installed equipment on the land totaling $1,835,700. Most of this revenue would flow to common schools in the state.

The potential increase in tax revenue collected would represent a 202 percent increase over existing property taxes. However, this amount would only be approximately 0.40 percent of the Maricopa County property tax revenue. The change in property taxes collected by Maricopa County under the Proposed Action would be a major increase over the existing taxes collected for private properties that would be crossed by the route, but a minor overall beneficial long-term impact for the taxing entities and the recipients of tax revenue.

Effects on State Trust Land Values and Revenues - A total of 615.2 acres of State Trust land would be required under Alternative 3. The value of this land is estimated to be $18.4 million, slightly more than Proposed Action. These lands would be leased to APS and removed from future development or sale. This effect is adverse, minor, and long-term.

Offsetting the loss of future development would be the lease revenue that APS would pay on State Trust lands to ASLD. That amount has been estimated by APS and is included in the ROW acquisition cost estimates shown in **Table 4.10-1**.

Effects on State Trust Land Grazing - Under Alternative 3, portions of six allotments would be affected, with a permanent loss of three AUMs (**Section 4.6**). If grazing permit holders could not find alternative options on State Trust land, the potential impact on grazing revenue for the State Land Trust would be a loss $82.80 (at 2011 lease rates). Under Alternative 3, the effects to State Trust land grazing revenue would be negligible and long-term.

Effects on Utility Rates – Under Alternative 3, the rates that APS customers pay for electricity would be increased to recover the cost of investment infrastructure through annual application of the transmission cost adjuster. Under Alternative 3, the estimated cost of construction would be approximately 2.4 percent more than the Proposed Action, Alternative 1, or Alternative 2, which (if the rate calculation methodology is proportional to project cost) would result in a slightly higher increase in customer rates than the Proposed Action.

Effects on Recreation - Under Alternative 3, the impacts to recreation access would be lower than those described under the Proposed Action because the SRMA containing areas heavily used for OHV recreation would not be crossed. Fewer BLM-managed public lands would be affected under Alternative 3, so there would be no impact to some types of motorized and non-motorized recreation use.

Nonmarket Values

Effects on Recreation Values - Under Alternative 3, the transmission line would not cross any of the areas heavily used for recreation. The line would be so far removed from SR 74 that there would be little change in recreational access. Therefore, there would be few changes in recreational values under this alternative. Under Alternative 3, approximately 54 acres planned for open space on private future developments would be crossed by the ROW. These acres may not be available for future recreation and the quality of the recreation experience would be changed by the presence of the transmission line. The effects could be long-term and adverse. The magnitude of these long-term effects cannot be determined.

Effects to Natural Amenities and Quality of Life - The effects to natural amenities and quality of life under Alternative 3 would be similar to those described for the Proposed Action. However, Alternative 3 only crosses Category III Sonoran desert tortoise habitat. Under this alternative, there would no impact on Category II Sonoran desert tortoise habitat. Keeping this habitat safe could be viewed by some residents as a positive outcome.

Health and Safety Concerns - The health and safety concerns under Alternate 3 are the same as those identified under the Proposed Action. The nearest existing residence to the transmission line under Alternative 3 would be over a mile away, and the exposure to EMF at the edge of the ROW would be well below the ICNIRP public limits.

State Trust Land Route Variation Sub-alternative

The State Trust lands Route Variation Sub-alternative differs from the Proposed Action only along a four mile route along West Cloud Road and North 211th Avenue east of Circle City.

Market Values

Economic Impacts of Construction Spending - The construction costs associated with the Sub-alternative are estimated to be $104.35 million; approximately $350,000 more than the Proposed Action due to the addition of two turning structures. The ROW acquisition cost of the Sub-alternative as well as the construction duration and schedule would be the same as the Proposed Action. The annual economic impacts on employment, labor income, and economic output in Maricopa County generated by construction spending in the County are shown in **Table 4.10-12**.

Similar to the Proposed Action, the economic impacts generated by construction-related spending are the largest in 2015, when project expenditures total almost $52.2 million. This level of spending would support almost 784 jobs in Maricopa County, provide $42.3 million in labor income for Maricopa County workers and generate $107.7 million in economic output for Maricopa County businesses.

The total economic impacts to the county under the Sub-alternative are higher than the Proposed Action because the level of spending is higher. The economic impacts shown in **Table 4.10-12** would end when the transmission line is complete.

Given the size of the Maricopa County economy, the economic effects of construction would be beneficial, short-term and minor for residents, workers, and businesses located in the county. Although this analysis is a county-wide assessment of impacts, it is reasonable to assume that some of these temporary benefits could flow to communities within the Study Area.

Table 4.10-12 Economic Impacts of Construction, State Trust Lands Route Variation Sub-alternative: 2013-2016

(Footnotes at end of table.)

	Employment	Labor Income*	Output*
Total Project Spending: $5,220,000			
Direct Effects	36.6	$2,169,534	$5,441,566
Indirect Effects	14.9	$886,201	$2,037,485
Induced Effects	26.8	$1,179,105	$3,291,269
Total 2013 Effects	**78.3**	**$4,234,840**	**$10,770,320**
	Employment	**Labor Income***	**Output***
Total Project Spending: $20,870,000			
Direct Effects	146.4	$8,678,136	$21,766,265
Indirect Effects	59.8	$3,544,804	$8,149,939
Induced Effects	107.2	$4,716,421	$13,165,078
Total 2014 Effects	**313.4**	**$16,939,360**	**$43,081,282**

Table 4.10-12 Economic Impacts of Construction, State Trust Lands Route Variation Sub-alternative: 2013-2016 (Continued)

(Footnotes at end of table.)

	Employment	Labor Income*	Output*
Total Project Spending: $52,180,000			
Direct Effects	365.9	$21,695,340	$54,415,663
Indirect Effects	149.4	$8,862,010	$20,374,847
Induced Effects	268.1	$11,791,052	$32,912,695
Total 2015 Effects	**783.5**	**$42,348,401**	**$107,703,205**
	Employment	**Labor Income***	**Output***
Total Project Spending: $26,090,000			
Direct Effects	183.0	$10,847,670	$27,207,832
Indirect Effects	74.7	$4,431,005	$10,187,423
Induced Effects	134.1	$5,895,526	$16,456,347
Total 2016 Effects	**391.7**	**$21,174,200**	**$53,851,602**

* Dollar estimates based upon 2011 values.

Economic Effects of Operations, Maintenance and Decommissioning - The operation and maintenance of the transmission line under the Sub-alternative would be the same as the Proposed Action. Therefore, the economic effects would be the same as those identified in the Proposed Action.

Effects of Developed Property Values and Undeveloped Land Values - The Sub-alternative is located along an area comprised entirely of State Trust land sections that are leased for grazing activities.

Under the Sub-alternative, there are four residences south of Cloud Road that would be within 200 feet of the transmission line. The value effects on these properties could range from -2.8 to -29 percent as discussed in **Section 4.10.1.2**. In addition, there are 20 to 30 residences that would be more than 200 feet from the transmission line, but located on property that may adjoin the ROW, and would have impacts to the property values. For the individual property owner who has a lot of existing equity and is trying to sell that property, the adverse impact could be major.

In addition to the residential properties identified above, approximately 2.1 acres of the BNSF Commercial development would be located within 200 feet of the transmission line but outside the ROW under the Sub-alternative. It is possible that the value of these lands could be negatively impacted by the presence of the transmission line. The potential effects range from 0 to -34.0 percent depending on location, available amenities and current market conditions.

Impacts of the presence of the transmission line on the marketing and sales of the property would be the same as described for the Proposed Action.

Effects on Property Taxes - No private property would be crossed by the State Trust Lands Route Variation Sub-alternative; however, if there is a decrease in the assessed valuation of

property located within 200 feet of the ROW or property that would adjoin the ROW, property tax revenue could decline if the property values of houses located within 200 feet of the transmission also decline. The effects of a decline in assessed property valuation would be adverse, minor and short-term for the current property owners. The reduction in the amount of property taxes collected would be small but measurable; however, given the total amount of property tax revenue collected by the County, the adverse impact for the taxing entities and the recipients of tax revenue would be negligible.

Effects on State Trust Land Values and Revenues - A total of 554.6 acres of State Trust land would be required under the Sub-alternative. The value of this land is estimated to be $16.6 million. Both the Sub-alternative and the Primary Segments of the Proposed Action route cross State Trust lands exclusively. While there would be no change in the overall acreage of disturbance under the Sub-alternative route compared with the Proposed Action, the Sub-alternative route leaves the subject block of State Trust land largely undivided and therefore potentially more valuable. The effect on State Trust land values and revenue under the Sub-alternative could be beneficial, major and long-term for ASLD.

Grazing Revenues - Under the Sub-alternative, one grazing allotment would be affected, resulting in the loss of less than one AUM. The annual loss of grazing revenue for the ASLD would be insignificant. The effects of the Sub-alternative to grazing revenue for ASLD would be negligible, and long-term.

Effects on Utility Rates - Under the Sub-alternative, the rates that APS customers pay for electricity would be increased to recover the cost of investment infrastructure through annual application of the transmission cost adjuster. Under the Sub-alternative, the estimated cost of construction would be more than that for the Primary Segment Common to all Action Alternatives, and would result in a larger increase in customer utility rates than under the Proposed Action.

Effects on Recreation - While the State Trust lands are undeveloped and may be used for recreation at some unknown level, they are not currently managed or authorized for recreation uses; therefore, the Sub-alternative would not result in any impacts to recreation.

Nonmarket Values

Effects to Recreation Values - Since the Sub-alternative would not result in any impacts to recreation, there would be no effects to recreation values.

Effects to Natural Amenities and Quality of Life - The effects to natural amenities and quality of life under the Sub-alternative are similar to those for the Proposed Action, but of a potentially higher intensity for the estimated 12 private residence owners along Cloud Road and 211th Avenue that would be closest to the transmission line. A decline in property values of existing structures located within 200 feet of, or on property adjoining the transmission line could have an adverse effect on the quality of life for these property owners (See **Effects on Developed Property Values and Undeveloped Land Values** above). Impacts to the residents' views are analyzed in **Section 4.14**. These effects to natural amenities and quality of life could be major and long-term for these property owners.

Under the Sub-alternative there would be no anticipated effects to Sonoran desert tortoise habitat; however, some marginally suitable habitat for tortoise exists within the common desert scrub habitats crossed by the Sub-alternative.

Health and Safety Concerns - The health and safety concerns under the Sub-alternative are the same as those identified under the Proposed Action. As described in **Section 3.7.2.8**, the EMF levels estimated to occur at the edge of the ROW would be well below the ICNIRP public limits. While the residences along Cloud Road and 211th Avenue would be in relatively close proximity to the transmission line, their exposure to EMF levels would be below that occurring at the edge of the ROW, and thus well below the ICNIRP public limits.

Primary Segment Common to All Action Alternatives

Impacts to all aspects of socioeconomics would be the same under the Primary Segment as the Proposed Action.

4.10.2.3 Environmental Justice

Impacts Common to All Action Alternatives

Environmental justice impacts would be common to all Action Alternatives because the identified EJ community is located southwest of US 60, within and immediately adjacent to the portion of the route that is common to all Action Alternatives (See **Section 3.10.8** and **Figure 3.10-1**). However, it should be noted that pockets of low-income groups could be located in the general area but outside of the EJ community, and impacted by the Project.

Potential Environmental and Adverse Health Impacts

The EJ concerns for this Project, as expressed during the Economic Strategies Workshop conducted on June 8, 2011 at the BLM National Training Center in Phoenix, include property values, health issues that may be associated with EMFs, visual impacts, and other quality of life issues. A literature review of impacts from similar (transmission line) projects gave conflicting results as to the level of impacts and the distances from transmission lines over which impacts occur (URS 2012g). These included lines through both rural and developed areas. In general, the greatest impacts were to properties within a few hundred feet of the lines or adjoining the ROW, and were reduced with distance from the line. The farthest distance from the lines at which the reviewed studies identified impacts was three miles (URS 2012g).

Environmental Justice and NEPA

"Goal 1" of the Department of Interior Environmental Justice Strategic Plan (DOI 1995b) is "The Department will involve minority and low-income communities as we make environmental decisions and assure public access to our environmental information."

In its EJ guidance under NEPA, CEQ (1997) states that agencies have an obligation under NEPA "to ensure effective public participation and access to information," even to the extent of translating critical documents if necessary to make them accessible to populations with limited English language skills. CEQ also notes that where EJ communities are present, agencies should address significant and adverse impacts on those communities, and identify mitigation measures for those impacts. "Each Federal agency must provide opportunities for

effective community participation in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of public meetings, crucial documents, and notices." (CEQ 1997)

Disproportionate Impact Analysis

Proximity of the ROW to Private Undeveloped/Unoccupied Property - As previously discussed in **Section 3.10.8**, one EJ community was identified at the census tract block group scale within the Study Area. To determine whether disproportionate impacts would occur within the EJ community, the areas where the ROW would cross or adjoin private property were measured and the impacts were compared between the areas within versus outside the EJ community. **Table 4.10-13** provides this comparison.

According to EPA's Guidance, "it is important to understand where such communities are located and how the lives and livelihoods of the members of these communities may be impacted by the Project." This is because "minority and low-income populations are likely to be dependent upon their surrounding environment (i.e., subsistence living), more susceptible to pollution and environmental degradation (e.g., reduced access to health care), and are often less mobile or transient than other populations." (Totten et al. 1998)

The EJ issues of concern from the Project involve aesthetic and economic impacts that would affect the EJ community within the Study Area. Approximately 8.6 percent of the overall Project would cross through the EJ community. Within the EJ community, nine percent of the route would occupy private property (no portion of the route within the EJ community would adjoin and not occupy private property). This represents less than one percent of the total ROW. Approximately 3.6 acres of private property within the EJ community would be within 200 feet of the transmission line and outside the ROW, and could see reductions in property value ranging from zero to 36 percent.

Under the Proposed Action, 31 percent of the portion of the route outside the EJ community would adjoin or occupy private property. Approximately 52 acres outside the EJ community would be within 200 feet of the transmission line and outside the ROW, and could see reductions in property values ranging from zero to 36 percent. This represents approximately 28 percent of the total ROW. Because the Alternative 2 and 3 routes are longer and cross or adjoin more private property, the proportion would be higher under those alternatives. Over three times more private property in the portion of the route outside the EJ community would be crossed or would adjoin the ROW as that within the EJ community. As a proportion of the length of the ROW, the Proposed Action and Action Alternatives do not appear to have a disproportionate impact on the EJ community.

Proximity of the ROW to Private Developed/Occupied Property – While much of the private lands within the Study Area are in various stages of planning for residential and other development, there are very few existing residences in proximity to the transmission line under the Proposed Action or Alternatives 2 and 3.

Table 4.10-13 Comparison of Mileage of ROW Crossing or Adjoining Private Property Within and Outside the Environmental Justice Community

(Footnotes at end of table.)

	PROPOSED ACTION/ PREFERRED ALTERNATIV	ALT 1	ALT 2	ALT 3	SUB-ALTERNATIVE
Total ROW					
Total Route Length (miles)	38.2	38.2	37.4	38.4	4.0
Portion of the ROW Within EJ Community					
Route Portion Length (miles)	3.3	3.3	3.3	3.3	0
Percentage of Total Route that would be within the EJ Community	8.6%	8.6%	8.6%	8.6%	0%
Length of ROW that would Occupy Private Property within the EJ Community (miles)**	0.3	0.3	0.3	0.3	0
Percentage of the ROW that would Occupy Private Property in the EJ Community	9% of the portion of the route through the EJ community Less than 1% of the total ROW	9%	9%	9%	0%
Portion of the ROW Outside the EJ Community					
Route Portion Length (miles)	34.9	34.9	34.1	35.1	4.0
Length of Route that would Adjoin* Private Property (miles)	6.5	6.5	6.5	6.5	2.5
Percentage of the Route Portion that would adjoin* Private Property	19%	19%	19%	19%	62.5%

Table 4.10-13 Comparison of Mileage of ROW Crossing or Adjoining Private Property Within and Outside the Environmental Justice Community (Continued)

(Footnotes at end of table.)

	PROPOSED ACTION/ PREFERRED ALTERNATIV	ALT 1	ALT 2	ALT 3	SUB-ALTERNATIVE
Route Portion that would occupy private property (miles)	4.3	4.3	7.7	10.3	0
Percentage of the Route Portion that would occupy private property	12%	12%	23%	29%	0
Route Portion that would adjoin* or occupy private property (miles)	10.8	10.8	14.2	16.8	2.5
Percentage of the Route Portion that would adjoin or occupy private property	31% of the route portion 28% of the total ROW	31% of the route portion 28% of the total ROW	42% of the route portion 38% of the total ROW	48% of the route portion 44% of the total ROW	62.5%

*For purposes of this analysis the term "adjoin" is defined to include private properties that directly adjoin the ROW or are only separated from the ROW by a road but not other properties (i.e., Cloud Road, in the case of the Sub-alternative. Properties south of Cloud Road are considered to adjoin the ROW because there are no other properties between the ROW and the properties south of Cloud Road; the only separation is Cloud Road itself).

**There are no portions of the ROW in the EJ Community that would adjoin and not cross private property.

The following describes the proximity of the nearest existing residences and communities to the proposed transmission line.

EJ Community:

- Examination of aerial photography indicates possibly two residences are in the vicinity of the intersection of Lone Mountain Road and 235th Avenue, which is the portion of the route common to all Action Alternatives. The nearest existing residence would be approximately 640 feet from the proposed centerline, and the property containing the residence may adjoin the ROW, and the property value may be affected.
- The nearest neighborhood/residences of Circle City would be approximately 0.50-mile west of the centerline, which is the portion of the route common to all Action Alternatives. Under the Sub-alternative, the intersection of the Sub-alternative route along Cloud Road with the portion of the route common to all Action Alternatives along 235th Avenue would be approximately 0.50-mile east of Circle City.

Portion of the Route Outside the EJ Community:

- Quintero: Under the Proposed Action, the nearest existing residences would be approximately 0.70-mile from the centerline.
- Thunder Ridge Airpark: Under the Proposed Action, the nearest existing residence would be approximately 1,000 feet from the centerline.
- Vistancia: Under Alternative 3, the nearest existing residence would be approximately 1.5 miles south of the transmission line.

The proximity of existing structures/residences to the proposed transmission line are about the same for existing residences within the EJ Community as existing residences outside the EJ Community under the various Action Alternatives; however, it is likely that a greater number of existing residences in the Circle City area would be in relatively close proximity to the transmission line than numbers of residences outside the EJ Community.

Conclusion - The above analysis of proximity of the ROW to private undeveloped/unoccupied property, and proximity of the ROW private developed/occupied property suggests that overall, potential adverse impacts would not be disproportionately high to the EJ community as a result of the Proposed Action or any of the Action Alternatives.

4.10.2.4 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives.

The No Action Alternative would result in no socioeconomic or EJ impacts from construction activities and post-construction operational survey and maintenance activities that would have occurred in conjunction with the Proposed Action or Action Alternatives.

However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to socioeconomics and EJ could be similar to those described for the Proposed Action and Action Alternatives. Should the route be longer or shorter than the Proposed Action or Action Alternative (resulting in different amounts of construction required), beneficial and adverse impacts may be increased or decreased.

Given APS' commitment to construction of such a proposed transmission line, under the No Action alternative, APS would need to re-engage with the ACC and complete a process for the ACC to issue a new CEC. Should BLM-managed public lands be involved, for example in the vicinity of the Sun Valley Substation location, additional NEPA analysis would also be required for the federal action. The processes to obtain a new CEC from the ACC and any additional NEPA analysis would increase the overall Project cost and delay Project implementation. Delay of implementation could result in the following indirect effects:

- Increased reliability of electrical infrastructure that would be provided by the new 500kV transmission line would be delayed.
- Delay in construction of the 500kV transmission line would delay the capacity to facilitate delivery of electricity from projected renewable energy resources to the Phoenix area, which could in turn delay in development of additional renewable energy resources.

Construction of the 230kV transmission line could be delayed, in which case the development of new residential, commercial, and recreational uses in the Town of Buckeye, City of Surprise, City of Peoria, and unincorporated Maricopa County could be delayed.

4.10.3 Mitigation and Residual Effects

There is no mitigation proposed for socioeconomic resources, thus no residual effects are anticipated.

Several mitigations are proposed to address EJ concerns and eliminate potential residual effects. They include:

- At least one public meeting on the Draft EIS was held at a time and location easily accessible to the identified EJ community, and this meeting was well publicized using media that are prominent in the EJ community.
- The transmission line route through the EJ community would use public (state or federal) land to the extent possible to minimize direct impacts to the community.

4.10.4 Unavoidable Adverse Impacts

The potential loss in property values for individuals living within 200 feet of the transmission line would be an unavoidable adverse impact.

4.11 SOILS

4.11.1 Indicators and Methods

Indicators used to assess potential impacts to soil resources include the following:

- Acres of soil disturbance and acres to be reclaimed
- Suitability of growth medium for reclamation

4.11.2 Direct and Indirect Effects by Alternative

4.11.2.1 Impacts Common to All Action Alternatives

Construction

The number (22) and type of soil units that would be impacted by the Proposed Action and all Action Alternatives between the Sun Valley Substation and 179th Avenue would be identical. Approximately 62 acres of the proposed ROW in this section would cross soil units identified as being Prime Farmland, if irrigated. High soil shrink/swell potential exists from essentially 235th Avenue east and south along the route to the Sun Valley Substation and immediately west of the Morgan Substation for approximately the first mile of all Action Alternative routes.

Where practical, access within work areas would be via overland travel, with minimal to no grading where feasible in temporary work areas. Topsoil would not be salvaged from temporary work areas unless the areas are to be graded. If grading is required, topsoil would be salvaged for reuse during reclamation. Topsoil would typically be salvaged from areas of permanent disturbance.

After construction activities, all work areas identified as temporary disturbance would be reclaimed and salvaged topsoil would be re-distributed. With the implementation of topsoil salvage and reuse practices, soil conservation measures, BMPs, and other proposed operating procedures, impacts to the temporarily disturbed acres of the soil resource would be site-specific, temporary, and moderate.

Physical Changes to Soil Resources

Surface disturbance, including the removal of topsoil resources for replacement during reclamation, would result in direct impacts. Physical and chemical changes to the soil would be expected to be long-term and minor, and would occur as a result of topsoil salvage and reclamation operations. Topsoil that is used to reclaim disturbed areas immediately after construction activities would begin to revert to more natural conditions.

Direct physical impacts to soil resources include compaction and crushing of the topsoil by equipment during salvage, stockpiling, construction, and reclamation activities. Physical effects of soil compaction would be short-term, minor to moderate, and include reduced permeability and porosity, damage to microbiotic crusts, increased bulk density, decreased available water holding capacity, and increased erosion potential. Soil microorganisms such as bacteria and fungi, important in the decomposition of biological materials and the formation and improvement of soil, would be impacted. Natural processes, such as wind and

water transport of soil particles from surrounding areas would continually inoculate the site with these microorganisms.

Soil Productivity

Soil productivity is defined as the capability of a soil for producing a specific plant under specific management (SCS (Soil Conservation Service 1986). Factors that influence soil productivity include climate, length of growing season, and soil characteristics such as texture, depth, and fertility. Impacts to the soil resource such as erosion and compaction can reduce soil productivity. Productivity of stockpiled topsoil would be directly affected by mixing of the soils during salvage operations. The incorporation of vegetative materials into the salvaged topsoil during stripping would increase the organic matter content of the topsoil material, helping to increase potential productivity. The mixing of soils characteristic of low productivity (i.e. high salt content, clayey texture, or high coarse fragment content) with soils characteristic of higher productivity (i.e. low salt content, loamy texture, or low coarse fragment content) may serve to dilute negative soil characteristics and potentially increase the production potential of the growth medium.

Soil compaction can contribute to soil erosion and reduced soil productivity. Generally, soils in the Study Area characteristically have a high percentage of coarse fragments, which would provide moderate support for heavy equipment by reducing the amount of compression on the underlying soils. Productivity loss due to compaction influences would be negligible to minor.

The total volume of growth medium available for reclamation activities would be salvaged from all disturbance areas, including permanently disturbed areas that would not be reclaimed, and would be expected to provide suitable depth to achieve adequate and uniform coverage for seedbed preparation and reclamation. The quality of these mixed salvage soils is likely to be similar to or slightly better than the characteristics of the individual soils prior to disturbance.

Soil Loss/Erosion

Soil erosion potential is determined based on physical soil characteristics, k-factor rating, and slope. Areas located on steep slopes are inherently susceptible to erosion. The majority of reclaimed areas for all Action Alternatives would incorporate a generally flat to gently sloped surface during regrading and reclamation activities. Potential for erosion would be increased on disturbed areas after soil salvage operations due to removal of the vegetative cover and the loss of surface soil structure. Erosion of growth medium after redistribution on re-graded sites would also have a greater potential until the soil is stabilized by successful revegetation. Soil characteristics identified in **Section 3.11** suggest that disturbed areas would experience low to moderate erosion potential either by wind or water. The wind erosion hazard is expected to be low to moderate due to the high percentage of coarse fragments throughout the soil profiles of many soils in the Study Area (SCS 1986). Windblown dust would result from the disturbance of fine-textured soils during construction and reclamation activities through the completion of the Project.

The majority of the impacts to soil resources would be temporary, although the actual footprints of the structures and new access roads would result in permanent impacts to the soil resource, for those disturbances left unreclaimed. Cutting of trees and removal of

vegetation may occur; however, where practicable, downed vegetation and undisturbed low vegetation would be left in place within the disturbance areas to serve as soil protection and erosion control. Vegetation would only be cleared to the extent necessary, minimizing impacts to soil resources.

Operations, Maintenance, and Decommissioning

Long-term operations and maintenance of the transmission line facilities may require access to the route via existing roads, and may result in temporary disturbance; however, this effect would be minor to negligible. The addition of the 230kV line at some point in the future would have negligible impacts, as established access roads and other permanent impacts would be used, similar if and when decommissioning activities occurred.

4.11.2.2 Proposed Action

Construction

The Proposed Action would result in approximately 230 acres of temporary disturbance and 108 acres of permanent disturbance. A total of 29 different soil map units shown in **Figure 3.11-1** would be crossed by the Proposed Action route. Of the 29 different soil units, 10 of them make up approximately 64 percent of the route, each of the 10 making up at least 5 percent. Of these soil units, they all have a low to moderate rating of erosion potential and a poor reclamation suitability rating.

Operations, Maintenance, and Decommissioning

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

4.11.2.3 Alternative 1: Proposed Action with Additional Corridor

Construction

Construction activities and impacts as described above in **Sections 4.11.2.1** and **4.11.2.2** would be the same for Alternative 1. Additionally, acres of temporary and permanent disturbance associated with Alternative 1 would also be the same as the Proposed Action.

However, under this alternative, there would be a change in management of lands managed by the BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor could impact additional soils resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to soil resources.

Operations, Maintenance, and Decommissioning

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

4.11.2.4 Alternative 2: ROW South of SR 74

Construction

Construction activities and associated impacts as described above in **Section 4.11.2.1** would be similar to the Proposed Action under this alternative, but could be expanded to include many more acres due to the designation of a multiuse utility corridor south of SR 74 (potential future development within an established multiuse utility corridor is addressed in **Section 4.19**). Alternative 2 would result in approximately 224 acres of temporary disturbance and 104 acres of permanent disturbance. A total of 30 different soil map units shown in **Figure 3.11-1** would be crossed by the Alternative 2 route. Of the 30 different soil units, 11 of them make up approximately 68 percent of the route, each of the 11 making up at least 5 percent. Of these soil units, they all have a low to moderate rating of erosion potential and 10 of the 11 have a poor reclamation suitability rating, with one having a fair rating.

In addition, under this alternative, there would be a change in management of lands managed by the BLM, by establishing a multiuse utility corridor on lands south of SR 74. Co-location of future utilities within the proposed additional corridor would impact additional soil resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to soil resources.

Operations, Maintenance, and Decommissioning

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

4.11.2.5 Alternative 3: Carefree Highway Route

Construction

Construction activities and associated impacts as described above in **Section 4.11.2.1** would be similar to the Proposed Action under this alternative. Alternative 3 would result in approximately 229 acres of temporary disturbance and 108 acres of permanent disturbance. A total of 30 different soil map units shown in **Figure 3.11-1** would be crossed by the Alternative 3 route. Of the 30 different soil units, 7 of them make up approximately 54 percent of the route, each of the 7 making up at least 5 percent, with one of them (soil unit 109 - Schenco-Rock outcrop complex) making up over 10 percent. Of these soil units, they all have a low to moderate rating of erosion potential and a poor reclamation suitability rating.

Operations, Maintenance, and Decommissioning

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

4.11.2.6 State Trust Land Route Variation Sub-alternative

Sub-Alternative

Construction

The Sub-alternative route would cross a total of five different soil map units, with two of them comprising 77 percent of the ROW. Of these soil units, they all have a low to moderate rating of erosion potential and a poor to fair reclamation suitability rating. A portion of the ROW would cross one soil unit identified as being Prime Farmland, if irrigated.

Operations, Maintenance, and Decommissioning

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

Primary Segment Common to All Action Alternatives

Construction

The Primary Segment would cross a total of six different soil map units, with three of them comprising 78 percent of the ROW, each of the three making up at least 20 percent. Of these soil units, they all have a low to moderate rating of erosion potential and a poor reclamation suitability rating. A portion of the ROW in this Primary Segment would cross one soil unit identified as being Prime Farmland, if irrigated.

Operations, Maintenance, and Decommissioning

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

4.11.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts to soil resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to soil resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected. Should the route be longer or shorter than the Proposed Action or Action Alternatives (resulting in different amounts of ground disturbance), adverse impacts may be increased or decreased.

4.11.3 Mitigation and Residual Effects

Soil Stabilization

In order to minimize the potential for erosion, temporarily disturbed surfaces would be restored at or as near to the original contour of the land surface as possible. Water diversions would be constructed along the ROW, as needed, to control surface water and minimize soil

erosion. Temporary construction access roads, not required for future maintenance access, would be restored after construction of the Project is complete. Areas of soil compaction, including temporary access roads, would be scarified as needed. Seeding would be used where appropriate to reestablish soil stability.

Revegetation

Appropriate site-specific seed mixes for revegetation would be used where conditions vary. Salvaged native plants would be used for revegetation, if appropriate, along with seeding using BLM-recommended and approved seed mixes. Preferably, seed would be planted during months identified as most preferable for revegetation success following construction. Seed would be planted as directed by appropriate land managing agency.

Mitigation Practices

Mitigation practices that would be employed as a part of this Project to ensure that the soil resources are protected and/or impacts minimized include the following:

1. Vegetation would be cleared and the construction ROW would be graded only to the extent necessary. Vegetation within the ROW would be trampled or cut at or near the ground level. Except for the area to be excavated, the vegetative root system and subsurface soils would be left intact to the greatest extent practicable. This would help stabilize the soils within the ROW during construction. ROW boundaries would be clearly staked or flagged and no disturbance would be allowed beyond the limits.
2. Design access roads to fit the terrain by avoiding unstable slopes and highly erodible conditions, to the extent practicable, to protect soils and prevent excessive erosion and sedimentation. These protective measures include, but are not limited to, mulch, tracking, matting, or slope length shortening. When soils are wet, construction, operation, and maintenance activities would be restricted so as to properly support construction or maintenance equipment (i.e., when heavy equipment creates ruts in excess of 4 inches deep over a distance of 100 feet or more in wet or saturated soils). Where the soil is deemed too wet, one or more of the following measures would apply:

- Re-route all construction or maintenance activities around the wet areas so long as the route does not cross into sensitive resource areas.
- If wet areas cannot be avoided, implement BMPs for use in these areas during construction and improvement of access roads, and their subsequent reclamation. This includes use of wide-track or balloon-tire vehicles and equipment, or other weight dispersing systems approved by the appropriate resource agencies. It also may include use of geotextile cushions, pre-fabricated equipment pads, and other materials to minimize damage to the substrate where determined necessary by resource specialists.

Following the implementation of the mitigation measures, residual effects would include permanent changes to soils; however, the amount of affected acreage would be very small.

4.11.4 Unavoidable Adverse Impacts

Native soil conditions on disturbed areas would be lost due to the breakdown of soil structure, adverse effects to microorganisms, and discontinuation of natural soil development.

4.12 TRANSPORTATION AND TRAFFIC

4.12.1 Indicators and Methods

The following indicators would demonstrate the effect of the Project on transportation and traffic within the Study Area:

- Changes in traffic volume
- Miles of access road that would be constructed or improved
- Estimated percentage of access road that would be temporary versus permanent
- Project elements that would occur in standard arrival/departure flight paths

Table 4.12-1 describes the range of effects in terms of quality, magnitude, and duration resulting from the Project, specific to transportation and traffic.

The analysis was performed by comparing existing traffic levels with amounts of construction-related traffic estimated by APS. The linear distances of proposed access road construction or improvement were also provided by APS and were analyzed against the existing road system to identify intersection improvement locations.

Table 4.12-1 Description of Transportation and Traffic Effects Levels

ATTRIBUTE OF EFFECT		DESCRIPTION RELATIVE TO TRANSPORTATION AND TRAFFIC RESOURCES
Quality	Beneficial	An improvement of current transportation or traffic conditions.
	Adverse	A degradation of current transportation or traffic conditions.
Magnitude	Negligible	A change in current transportation or traffic conditions that is too small to be physically measured using normal methods or perceptible to a human observer. There is no noticeable effect on the baseline setting. There are no required changes in management or utilization of the transportation system.
	Minor	A change in current transportation or traffic conditions that is just measurable with normal methods or barely perceptible to a human observer. The change may affect individuals or a small (<25 percent) portion of transportation system users but does not result in an effect to the overall user population, or the value or productivity of transportation or traffic. There are no required changes in management or utilization.

Table 4.12-1 Description of Transportation and Traffic Effects Levels (Continued)

ATTRIBUTE OF EFFECT		DESCRIPTION RELATIVE TO TRANSPORTATION AND TRAFFIC RESOURCES
Magnitude	Moderate	An easily measurable change in current transportation or traffic conditions that is readily noticeable to a human observer. The change affects 25 to 75 percent of individuals or similar portion of users of a transportation system which may lead to an effect to the overall user population, or the value or productivity of transportation or traffic. There are some required changes in management or utilization.
	Major	A large measurable change in current transportation or traffic conditions that is easily recognized by all human observers. The change affects more than 75 percent of individuals of a user population which leads to significant modification of the value or productivity transportation or traffic. There are profound or complete changes in management or utilization. An effect that is not in compliance with applicable regulatory standards or thresholds.
Duration	Short-term	10 years or less.
	Long-term	More than 10 years.

4.12.2 Direct and Indirect Effects by Alternative

4.12.2.1 Impacts Common to All Action Alternatives

Construction

The majority of effects to transportation and traffic would occur during the estimated 22-month construction phase of the Project. Construction would be performed in the following sequence of activities: pre-construction engineering surveys (months prior to construction); surveying and staking of the centerline; construction mobilization, construction of access roads; locating and establishing material and construction yards; installing foundations and anchors; assembling and erecting the structures; installing ground rods and counterpoise; installing conductors, shield wires, and fiber optic cables; commissioning the line; and cleanup and site reclamation.

Under all Action Alternatives, various combinations of local arterial and collector roads would be required for continuous access as identified on **Figure 4.9-1**. Access roads would be necessary to provide access to the ROW for construction equipment, haul trucks, and to operation and maintenance workers (**Figure 4.9-1**). The majority of these access routes would utilize existing public streets, highways, private roads, and adjacent gravel/unsurfaced roads. If an existing road would not meet the service requirements for construction, it would be upgraded as necessary. A portion of the access routes shown on **Figure 4.9-1** would require the development of a new road. A permanent, 14-foot wide access road would be

constructed along the entire length of the ROW. All access roads would either be improved (as necessary) or developed to a width of 14 feet on straight sections and 16- to 20-foot width at curves to safely accommodate the construction traffic; however, for the purposes of this EIS, the disturbance analysis assumes a 14-foot width for access roads.

In locations where a proposed access road intersects with either SR 74 or US 60, turnouts or acceleration/deceleration lanes would be constructed as required by the ADOT. These locations, dependent upon the Action Alternative, are shown on **Figure 4.9-1**. In locations where there is a transition from a paved to an unpaved surface, track-outs would be installed. A track-out is a steel or gravel pad that captures sediment from construction equipment, so it doesn't affect the paved roadway. These track-outs would be located at proposed access road points along SR 74, 211th Avenue, US 60, Patton Road, and at one access point leading into Alternative 3 (Carefree Highway Route).

In general, all construction access roads developed/improved outside the transmission line ROW would be reclaimed at least back to their original, pre-disturbance condition. Therefore, these access roads would be considered temporary, especially because some of the proposed access roads outside the ROW are already trails and/or two-track unsurfaced roads. All construction access roads developed/improved inside the transmission line ROW would not be reclaimed and therefore would be considered permanent, since they would be used for future maintenance activities and when the 230kV line is installed. However, unpaved access roads within the ROW would be allowed to naturally revegetate and Arizona crossings (also known as fords) would be installed at drainages/wash crossings. Applicable ADOT BMPs would be implemented to control erosion and provide stabilization.

The location of all proposed access roads would be further refined and specified once the Project is approved, the final route selected, and detailed engineering is actually prepared. This detailed information would be thoroughly described in the Implementation POD that would be finalized once the EIS is finalized and the ROD is issued.

Traffic may become heavier or impeded due to the presence of additional construction-related traffic on the access routes. This effect on traffic would not occur in any one location for the entire 22-month construction phase, but would move with the progress of construction. Most of the increase in traffic volume would be observable on roads between staging areas and the ROW. This effect would be short-term (22 months).

Operations, Maintenance, and Decommissioning

For any of the Action Alternatives, routine operations and maintenance activities would typically be conducted annually, or as required, by using fixed-wing aircraft, helicopters, ground vehicles (4x4 trucks or 4x4 All-Terrain Vehicles (ATVs), or on foot in accordance with APS' established policies and procedures for transmission line inspection and maintenance. Existing access roads would likely be adequate for the majority of these activities. The majority of these impacts would range from negligible to minor.

However, the transmission line would be constructed approximately 0.33 mile east of a private airstrip (Thunder Ridge Airpark). This is a private facility that serves nine residential homes. Because it is a private facility, the FAA does not have jurisdiction or regulatory authority over this facility. The facility hosts annual fly-in activities that regularly average 20 to 25 planes. The transmission line, once constructed, would run roughly parallel to the

single landing strip and would represent an air hazard if an aircraft approached from the east or overflew the airstrip on a westerly approach. This represents a major, long-term adverse effect to this private air facility. See **Section 4.12.3** for mitigation addressing this effect.

4.12.2.2 Proposed Action

Construction

There would be a total of approximately 9.5 miles of temporary access roads constructed/improved outside of the ROW. There would be 38 miles of permanent, access road constructed approximately parallel and/or along the centerline of the ROW. Eight access road intersections with SR 74/US 60 would require upgrades to safely accommodate construction vehicles entering these roadways from access roads and eight track-outs would be constructed to reduce the amount of sediment that would be deposited on SR 74 and US 60 during construction.

Construction-related traffic would vary according to the phase of the construction, and would move with the progress of the construction. The Proposed Action is expected to generate 21,712 vehicle trips within the Study Area during the 22-month construction period. These trips would all occur on SR 74 (10,856 total trips) and US 60 (10,856 total trips). The greatest increase in traffic would occur during the conductoring phase of construction; 32 construction-related vehicle trips per day would occur on SR 74 and US 60 for 80 days. This represents less than one percent increase in daily traffic on these two roadways that while measurable is unlikely to be noticed by other motorists. Therefore, the increase in traffic due to construction represents a minor, short-term adverse effect related to the Proposed Action. **Table 4.12-2** provides a summary of the estimated number of daily trips on SR 74 and US 60 during each phase of construction.

Table 4.12-2 Effect of Construction Traffic on Existing Annual Average Daily Traffic

(Footnotes at end of table.)

CONSTRUCTION PHASE (# OF ESTIMATED WORK DAYS)	ROADWAY	2009 AADT (MINIMUM - MAXIMUM # VEHICLES)	CONSTRUCTION VEHICLE TRIPS PER DAY[1]	PERCENT INCREASE OF MINIMUM AADT	PERCENT INCREASE OF MAXIMUM AADT
Access Road Construction/Pad Preparation (80 days)	SR 74	5,500 - 5,700	4	<1	<1
	US 60	9,300 - 22,500	4	<1	<1
Survey (40 days)	SR 74	5,500 - 5,700	4	<1	<1
	US 60	9,300 - 22,500	4	<1	<1
Hole Digging/ Foundation Installation (200 days)	SR 74	5,500 - 5,700	20	<1	<1
	US 60	9,300 - 22,500	20	<1	<1
Structure Haul and Erection (144 days)	SR 74	5,500 - 5,700	24	<1	<1
	US 60	9,300 - 22,500	24	<1	<1

Table 4.12-2 Effect of Construction Traffic on Existing Annual Average Daily Traffic (Continued)

(Footnotes at end of table.)

CONSTRUCTION PHASE (# OF ESTIMATED WORK DAYS)	ROADWAY	2009 AADT (MINIMUM - MAXIMUM # VEHICLES)	CONSTRUCTION VEHICLE TRIPS PER DAY[1]	PERCENT INCREASE OF MINIMUM AADT	PERCENT INCREASE OF MAXIMUM AADT
Conductoring (80 days)	SR 74	5,500 - 5,700	32	<1	<1
	US 60	9,300 - 22,500	32	<1	<1
Cleanup (40 days)	SR 74	5,500 - 5,700	6	<1	<1
	US 60	9,300 - 22,500	6	<1	<1
Reclamation (40 days)	SR 74	5,500 - 5,700	3	<1	<1
	US 60	9,300 - 22,500	3	<1	<1

[1] Does not include mobilization/demobilization of vehicles that typically stay on site.
Source: T. Strow, MAG, Personal Communication July 25, 2012

Aside from construction-related traffic increases, the Proposed Action would directly affect SR 74 and US 60 by construction vehicles turning onto and off these roadways. Construction vehicles would be entering these roadways at eight different locations, but the intersections would be improved with acceleration/deceleration lanes to meet safety requirements. For some phases, such as hole digging/foundation installation, structure haul and erection and conductoring, there could be 20 to 32 such events each day on SR 74 and US 60. There would be a noticeable effect to traffic and motorists at these locations during these construction phases that would be moderate, short-term (approximately 424 days), and adverse.

Construction impacts associated with air or rail transportation and traffic issues are not anticipated. Under the Proposed Action, the transmission line would be constructed adjacent to, but not within, the LAFB Auxiliary Field #1 APZ. The ACC-certificated route does encompass the northwestern-most end of this zone. Construction activities would not block the railroad tracks, and guard structures would be erected over railroad tracks during wire installation. The construction access onto US 60 would occur south of the roadway and would not involve crossing the BNSF railroad tracks.

Operations, Maintenance, and Decommissioning

Impacts associated with operations, maintenance, and decommissioning would be similar to those already described above in **Section 4.12.2.1**.

The ADOT indicated to BLM that "the Department does not see any conflicts with the placement of this line adjacent to our future ROW easement needs as identified in the ADOT SR 74 Feasibility Report, Right-of- Way Preservation" (R. Samour, personal communication, December 2010).

4.12.2.3 Alternative 1: Proposed Action with Additional Corridor

Construction

The effects to transportation and traffic under Alternative 1 would be the same as those under the Proposed Action.

Operations, Maintenance, and Decommissioning

The effects to transportation and traffic under Alternative 1 would be the same as those under the Proposed Action.

4.12.2.4 Alternative 2: ROW South of SR 74

Construction

There would be a total of 8.5 miles of temporary access roads constructed/improved outside of the ROW under Alternative 2. This represents a moderate, short-term (22-month) effect to transportation within the Study Area. There would be 37 miles of permanent, unimproved access road constructed along the centerline of the ROW. Nine intersections with SR 74/US 60 would require upgrades and 12 track-outs would be constructed.

With the above differences, the effects to transportation and traffic under Alternative 2 would be similar to those under the Proposed Action.

Operations, Maintenance, and Decommissioning

The effects to transportation and traffic under Alternative 2 would be the same as those under the Proposed Action.

4.12.2.5 Alternative 3: Carefree Highway Route

Construction

There would be a total of 9.0 miles of temporary access roads constructed/improved outside of the ROW under Alternative 3. This represents a moderate, short-term (22-month) effect to transportation within the Study Area. There would be 38 miles of permanent, unimproved access road constructed along the centerline of the ROW. Only one intersection with US 60 would require upgrade and potentially up to three track-outs would be constructed.

With the above differences, the effects to transportation and traffic under Alternative 3 would be similar to those under the Proposed Action.

Operations, Maintenance, and Decommissioning

The effects to transportation and traffic under Alternative 3 would be the same as those under the Proposed Action.

4.12.2.6 State Trust Lands Route Variation Sub-alternative

Sub-alternative

Construction

The effects to transportation and traffic under this Sub-alternative would be the same as those under the Proposed Action and all Action alternatives.

Operations, Maintenance, and Decommissioning

No additional direct impacts to transportation and traffic would occur during operations, maintenance, and decommissioning.

Primary Segment Common to All Action Alternatives

Construction

Under the Primary Segment, impacts to transportation and traffic would be the same as described for the Proposed Action.

Operations, Maintenance, and Decommissioning

No additional direct impacts to transportation and traffic would occur during operations, maintenance, and decommissioning.

4.12.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts to transportation and traffic as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to transportation and traffic on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

4.12.3 Mitigation and Residual Effects

To mitigate the effect of the proximity of the transmission line to the Thunder Ridge Airpark, the transmission lines and structures adjacent to the single airstrip would be marked on a strictly voluntary basis, as the FAA does not have jurisdiction or regulatory authority over this facility.

Following the implementation of the mitigation measures, the transmission line, spherical markers, and lighting would represent a residual effect from the Project.

4.12.4 Unavoidable Adverse Impacts

Under the Proposed Action and all Action Alternatives, the transmission line would run within 0.33 mile of the Thunder Ridge Airpark private airstrip and would represent an air hazard if an aircraft approached from the east or overflew the airstrip on a westerly approach.

This represents an unavoidable adverse effect to this private air facility. Implemented mitigation measures would reduce overall impacts.

4.13 VEGETATION RESOURCES, INCLUDING NOXIOUS AND INVASIVE WEEDS AND SPECIAL STATUS PLANTS

4.13.1 Indicators and Methods

4.13.1.1 Indicators

The following indicators were determined to measure impacts to vegetation resources:

Vegetation Communities

- Potential disturbance to each vegetation community

Special Status Species

- Suitable habitat disturbance
- Occurrence in the Study Area

Invasive and Noxious Plants

- Proximity to known noxious or invasive weed invasions

4.13.1.2 Impact Levels

The following impact magnitude levels were defined for vegetation resources (**Table 4.13-1**).

Table 4.13-1 Description of Effect Magnitude Criteria with regard to Vegetation Resources

ATTRIBUTE OF EFFECT		DESCRIPTION
Magnitude (Intensity)	Negligible	Vegetation: The changes to vegetation community composition would not be able to be meaningfully measured or evaluated by a trained observer. Special Status Species: The changes to special status species individuals would not be able to be meaningfully measured or evaluated by a trained observer. Invasive and Noxious Plants: There would be no measurable increase in invasive and noxious plants.

Table 4.13-1 Description of Effect Magnitude Criteria with regard to Vegetation Resources (Continued)

ATTRIBUTE OF EFFECT		DESCRIPTION
Magnitude (Intensity) Continued	Minor	Vegetation: The changes to vegetation community composition would be detectable on the scale of the local communities within and immediately adjacent to the ROW. There would be no change to the value or productivity of the local community. Special Status Species: There would be a small, but detectable effect to habitat amount/quality or to individuals of a species that would be noticeable primarily on the scale of individuals in a localized area. There would be no effect on the viability of local populations or habitat capability. Invasive and Noxious Plants: The increase in invasive and noxious plants would be detectable in one or a few localized areas (within or immediately adjacent to the ROW) and would be manageable.
	Moderate	Vegetation: The changes to vegetation community composition would be easily measurable on a local scale and may impact the value or productivity of local vegetation communities. Special Status Species: There would be an effect to habitat amount/quality or to individuals of a species that would be clearly detectable and sufficient to cause effects on a local population scale. Effects may be a reduction in population numbers, density, or habitat capability that may reduce the species' existing distribution in the Project Area. Invasive and Noxious Plants: The increase in invasive and noxious plants would be such that new or existing infestations would spread beyond the ROW and may be more difficult to manage.
	Major	Vegetation: The changes to vegetation community composition would impact the value or productivity of local vegetation communities. Special Status Species: There would be an effect to habitat amount/quality or to individuals or a species that would have a substantial, highly noticeable influence on the local population and may affect the regional population. The effect is likely to reduce local population numbers, density, or habitat capability to the point that the species distribution within the Project Area would be substantially reduced if not eliminated, such that the population would not likely return to a sustainable level. Invasive and Noxious Plants: The increase in invasive and noxious plants would be such that unmanageable infestations would spread beyond the ROW.
Duration	Temporary	Short-lived (i.e., during construction).
	Short-term	10 years or less.
	Long-term	More than 10 years.

4.13.2 Direct and Indirect Effects by Alternative

4.13.2.1 Impacts Common to All Action Alternatives

Construction

Vegetation Communities

Clearing and grading activities associated with construction would either trample or clear vegetation within all temporary use areas. It is anticipated that clearing would be performed only when necessary, and various precautions would be taken to minimize ground disturbance and impacts to vegetation (see **Section 4.13.3**). However, it is possible that little vegetation would remain in some areas of the ROW.

Desert vegetation is slow to recover following disturbance (USGS 1999; Hessing and Johnson 1982; Wallace et al. 1981). Disturbance causes physical, hydrologic, chemical, and biological changes to the ground that make conditions less favorable for desert plants to establish, as the loss of vegetation usually means a loss of protective soil crusts and soil organisms that promote organic growth (USGS 1999). Even if vegetation is not removed, compaction of soils from overland travel causes increased wind and water erosion and decreased water infiltration into the soil, which limits the amount of water available to seedlings or recovering plants.

Succession can occur in deserts, and generally progresses from short- to long-lived species (Abella 2010). Annual species, which are major components of both young and old desert communities, rebound rapidly after disturbance (Abella 2010). In general, one can expect some kind of perennial cover to re-establish within 100 years. However, at least 100 years is expected for communities of perennial, long-lived plants (e.g., creosote bush) to re-establish, and possibly a minimum of several hundred years for the recovery of severely disturbed areas (USGS 1999). All disturbance to vegetation communities within and adjacent to the ROW would be long-term.

The Proposed Action and all Action Alternatives contain a very similar amount of (estimated) temporary and permanent disturbance. The two main vegetation types within the ROWs, creosote-white bursage desert scrub and Sonoran palo verde mixed cacti desert scrub, are also similarly distributed. Creosote-white bursage desert scrub occurs mainly west of US 60, where the Proposed Action and Action Alternative routes follow the same alignment, and Sonoran palo verde mixed cacti desert scrub occurs mainly east of US 60. The adverse impacts under all Action Alternatives from disturbance of both desert scrub vegetation types would be long-term and minor, because the removal of this vegetation would only be measurable on the scale of local communities immediately adjacent to the ROW.

Riparian habitats (Riparian Mesquite Bosque and Riparian Desert Shrubland) within the ROW would be avoided and would not be disturbed by construction activities.

Special Status Species

The crushing or removal of special status plant individuals would impact individual plants as well as reduce local population sizes if the species is common. Many SRA native plants were found throughout or in large parts of the Study Area. Pre-construction surveys would locate

special status plant individuals in the construction zone and any that cannot be avoided would be relocated/transplanted in accordance with the Arizona Native Plant Law. Not all relocated/transplanted individuals are expected to establish after re-planting due to conditions described above, and water stress due to the arid environment. Large numbers of individuals would likely be removed permanently. In addition, suitable habitat for these species would be lost within the ROW as the ground is disturbed. Impacts would be moderate and long-term for most SRA species, including saguaro, teddybear cholla, straw-topped cholla, tree cholla, Engelmann's hedgehog cactus, California barrel cactus, ocotillo, and yellow-spine prickly pear. Impacts would be moderate because these species are common in the Study Area (particularly within palo verde scrub habitat east of US 60) and local population distributions may be adversely affected due to the number of individuals removed.

Hohokam agave, a Sensitive species that has shown declines, would be adversely affected at the population scale by a loss of individuals. A biological monitor onsite would ensure that Hohokam agave individuals would be avoided. However, river terraces (suitable habitat) may be disturbed under any Action Alternative. If individuals are present, the loss of suitable habitat in the occupied area would be moderate and long-term.

Bigelow's onion, a SRA species that may occur around the Agua Fria River, would be avoided if possible, or salvaged. Suitable habitat would be disturbed, thus a loss of suitable habitat would occur under all Action Alternatives. These impacts would be long-term and minor, because only habitat in the local area (immediately surrounding the Agua Fria River) would be affected.

Invasive and Noxious Plant Species

The likelihood of invasive and noxious species introduction differs for each invasive and noxious species. In general, invasive and noxious weeds reproduce by seed and are spread rapidly and effectively by animal vectors, vehicles, wind, water, or physical movement (such as Russian thistle). Several invasive and noxious plant species were observed in the Study Area, within roadways, disturbed areas, and in ditches and drainages. If noxious weeds are already present at a site, disturbing the plants would likely facilitate the physical spread of seeds, and disturbing adjacent ground would open up space for new individuals to invade. Thus, any surface-disturbing activity in the vicinity of invasive or noxious plant species increases the potential for further spread and establishment of those species. Impacts from invasive and noxious plant species under any Action Alternative would be short-term and minor, considering mitigation measures outlined in **Section 4.13.3**.

Several invasive and noxious plants were observed in the Study Area that are responsible for changing fire regimes in the region, including cheatgrass, red brome, and Bermuda grass. As these species spread, fuel loading occurs and results in increased fire incidence within areas that historically have not burned frequently, and that contain native species without fire-resistant characteristics. Saguaro, for example, is readily killed by fire and rarely re-sprouts (Abella 2010). Any surface disturbing activity in the vicinity of these species would run the risk of spreading these species further as well as increasing the associated fire danger. Any substantial spread of these fire-prone invasive species as a result of the Proposed Action or Action Alternatives would be long-term and moderate.

Operations, Maintenance, and Decommissioning

Vegetation Communities

APS would keep necessary work areas around all structures clear of vegetation and would limit the height of vegetation along the ROW. A buffer of permanent disturbance would be established around all transmission line structures to facilitate inspection and maintenance. All woody vegetation, including shrubs and trees, would be cut down and treated with herbicides underneath each structure and 40 feet out from the foot of each structure. An area approximately 0.2-acre in size surrounding each monopole (other types of structures may require more disturbance) would be permanently disturbed and would not return to a natural condition as long as the structure is in place. Major vegetation species that would be removed include palo verde (*Cercidium* spp. and *Parkinsonian* ssp.), mesquite (*Prosopsis* ssp.), acacia (*Acacia* spp.), desert ironwood (*Olneya tesota*), saguaro cactus, and tamarisk (*Tamarix* spp.). **Appendix 2A** specifies BMPs for the transplanting of saguaros from within the ROW during the Operations, Maintenance, and Decommissioning phase of the Project. The removal of these species within the ROWs would be long-term and minor.

Vegetation maintenance (i.e., pruning) would be conducted as needed (usually every 5-10 years) to provide adequate electrical clearance. Pruning (following IVM based on ANSI A300 Part 1-2001) involves selectively controlling tall-growing vegetation while preserving low-growing herbaceous and woody plant communities. This is done year-round and may involve mechanized equipment, herbicide application, trucks, OHVs, chainsaws, or heavy equipment. Typically this work requires two to six workers accessing the area and is completed in one to two working days. The desired outcome of IVM is stable communities of low shrubs that do not interfere with overhead transmission lines, pose a fire hazard, or hamper access, and that resist the invasion of tall-growing trees. The border zone within the remainder of the ROW is managed to establish small trees and tall shrubs that do not have the potential to block access, strike the electric facilities, or contribute to fuel loading. Pruning would have negligible impacts on vegetation communities.

Annual inspections outside of vegetation maintenance may be conducted using ground vehicles or on foot, and would have negligible effects to vegetation communities. When access is required for routine maintenance and repairs, the same precautions and procedures used during construction would be used to minimize ground disturbance and vegetation impacts. Routine maintenance activities typically do not include ground disturbance, as they are conducted by relatively small crews using minimum equipment, and over a few hours to a few days time. There would be no new roads or access routes required for vegetation maintenance.

If emergency maintenance is required, all efforts would be made to protect the environment. Emergency vegetation maintenance would be required if vegetation is arcing to the line, has caused a power fault, is burning from contact or arcing with the line, or when all portions of the tree are in contact with the line from falling or growing into the wires. There emergencies are rare considering routine vegetation maintenance. Other vegetation hazards that would require more frequent maintenance (more than once every 5-10 years, on average) include the presence of a live or dead standing tree predisposed to falling on electric facilities, a branch close enough to the power line that it poses a public health hazard, or any live or dead

tree that poses a future threat (within one year) to the electric facilities. Emergency maintenance would have long-term and minor impacts on vegetation communities.

Special Status Species

Special status species plants discovered through on-site monitoring work would not be affected by operations or maintenance activities. Any special status species present in work areas during construction would be avoided or salvaged, thus any salvaged plants would be re-planted following construction in temporary work areas and would be present during operations and maintenance activities, which would not affect plant establishment success.

Emergency maintenance activities may impact salvaged special status plants because the time-sensitive nature of activities may not allow for avoidance and plants may be trampled. These impacts would be long-term and minor because only plants in the immediate area would be affected.

Saguaros (a SRA; see **Section 3.13.3**) would not be treated with herbicides as part of routine vegetation management; however, saguaros within the permanent disturbance areas or that pose a hazard to the line or block access would be transplanted outside the ROW.

Invasive and Noxious Plant Species

The spread of invasive and noxious plant species is unlikely during operations and maintenance, as new disturbance would not occur and small crews would be used over short periods (and may not involve overland travel). The likelihood of invasive and noxious plants spreading following decommissioning would be similar to that following construction within temporary work zones. Re-vegetation would involve reseeding disturbed areas with native plants and weed-free seed as certified by the ADA.

4.13.2.2 Proposed Action

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**.

4.13.2.3 Alternative 1: Proposed Action with Additional Corridor

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**. In addition, under this alternative, there would be a change in management of lands managed by the BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor would impact additional vegetation resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to vegetation resources.

4.13.2.4 Alternative 2: ROW South of SR 74

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**. In addition, under this alternative, there would be a change in management of lands managed by the BLM, by establishing a multiuse utility corridor on lands south of SR 74. Co-location of future utilities within the proposed additional corridor would impact additional vegetation resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to vegetation resources.

4.13.2.5 Alternative 3: Carefree Highway Route

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**.

4.13.2.6 State Trust Land Route Variation Sub-alternative

Sub-alternative

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**.

Primary Segment Common to All Action Alternatives

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**.

The Primary Segment would cross one area of North American Warm Desert Riparian Mesquite Bosque, which covers approximately one acre within the 100-foot ROW. This area would be avoided and would not be disturbed by construction activities unless absolutely necessary.

4.13.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts to vegetation as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to vegetation located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

4.13.3 Mitigation and Residual Effects

4.13.3.1 Vegetation Communities

Areas of temporary disturbance, identified in **Table 2.4-4**, would be reclaimed according to BLM stipulations in the ROW grant and the final reclamation plan to meet the RMP reclamation goal to, "Maintain, restore or enhance the diversity, distribution, and viability of populations of native plants, and maintain, restore, or enhance overall ecosystem health." (BLM 2010a).

The following additional measures provide general guidelines as to what measures may be used to decrease vegetation resource impacts:

- In construction areas where recontouring is not required, vegetation would be left in place wherever possible, to avoid excessive root damage and allow for resprouting.
- In construction areas (e.g., structure sites, spur roads from existing access roads) where recontouring is required, surface restoration would occur in accordance with the land management agency permitting requirements. The method of restoration would typically consist of returning disturbed areas to their natural contour (to the extent practical), reseeding or revegetating with native plants (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches. Seed must be tested and certified to contain no noxious weeds in the mix by the State of Arizona Agricultural Department. Seed viability also must be tested at a certified laboratory approved by the authorized officer.
- All construction and maintenance activities would be conducted in a manner that would minimize disturbance to vegetation. In addition, all existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line, as defined by the land management agency.
- Species protected by the Arizona Native Plant Law would be relocated and transplanted in accordance with the law. A Vegetation Management Plan, approved by the BLM, would be included in the final POD. As dictated by the Arizona Native Plant Law, actions would include: 1) removal and stockpiling for replanting on site or 2) removal and transplanting out of surface disturbance areas. All personnel working on site would complete a mandatory Environmental Awareness Program, which includes pertinent information on the identification of Arizona Native Plant Law-protected plants.
- In designated areas, structures would be placed or rerouted so as to avoid sensitive features such as, but not limited to, riparian areas, or to allow conductors to clearly span the features, within limits of standard tower design.

4.13.3.2 Special Status BLM, USFWS Listed Species, and Arizona Native Plant Law

Pre-construction surveys would be performed in the ROW corridor and within all areas of potential new surface disturbance (i.e. access roads, laydown areas, etc.). Special status plants would be identified and marked. Designated surveys for Hohokam agave (*Agave murpheyi*) would be conducted in the layout/project planning phase and then again immediately prior (within a few days) to construction.

Special status plants would be protected to the extent that APS would conduct all activities in compliance with the Arizona Native Plant Law, which would include minimizing the destruction of native plants and in some cases relocating/transplanting individuals on or off-site. A Vegetation Management Plan would be prepared, included in the final POD, and approved by the BLM prior to initiating construction. APS would also work within the Arizona Native Plant Law in restoration and reseeding of construction-disturbed areas.

4.13.3.3 Invasive and Noxious Plants

BLM policy is to prevent the spread of invasive and noxious plants. Mitigation measures would be used at specific locations where resource sensitivity is high, such as where invasive and noxious weed infestations are existing within or near work areas. Several levels of prevention would be implemented such as minimizing disturbance to existing vegetation (leaving plants in place when possible) and reseeding disturbed areas with native plants and weed-free seed as certified by the ADA. All personnel working on site would complete a mandatory Environmental Awareness Program, which includes pertinent information on the identification of invasive and noxious plant species.

APS would treat any invasive species encountered during the course of herbicide vegetation maintenance projects within the ROW where it is reasonable, prudent, and effective. All appropriate regulations required by the landowner or land-management agency would be implemented and adhered to for any herbicide treatment activities.

A residual effect following the mitigation measures would be the slow growing nature of the plants and vegetation communities that are trying to be reestablished in disturbed areas.

4.13.4 Unavoidable Adverse Impacts

The destruction of native desert vegetation communities and special status plant species that occur within the construction zone would be unavoidable.

4.14 VISUAL RESOURCES

4.14.1 Indicators and Methods

4.14.1.1 Indicators

Indicators of impacts to visual resources include:

- Level of contrast between the landscape modifications connected with the Project and the surrounding landscape as viewed by sensitive viewers.
- Compliance with VRM classes established for BLM-managed public lands.
- Modifications that sensitive viewers would perceive to dominate the view through strong contrast of form, line, color, or texture in such a way that they demand attention and visually cannot be avoided. Modifications would dominate the view when:
    - At crossings, when structures on either side of SR 74 are visible.
    - The structures intersect the skyline creating strong contrast between the vertical line of the structures and the horizontal line of the skyline.
    - The structures appear larger than other landscape elements due to proximity of the viewer to the structures.
    - The structure characteristics – the cross-arms and structures holding the conductor – become visible.
    - The structures are close enough to the observer that the relatively smooth finish and symmetrical form contrast with the irregular textures and forms in the natural environment.
- Visibility of Project elements from surrounding areas managed for recreation.
- Changes to the VRI for BLM-managed public land that would result from Project-related modifications to the landscape.

4.14.1.2 Methods

Different methods are used to analyze impacts to federal and non-federal lands that would be affected by the Project. The BLM's management system for visual resources is described in **Sections 3.14.2** and **3.14.3**. Impacts to BLM-managed public lands are analyzed based on:

- Conformance to VRM class objectives, as measured by visual contrast analysis.
- Impacts to the VRI that would result from Project implementation. Project components could have a long-term impact on the scenic quality of an area, which would be reflected in the VRI.
- Impacts to surrounding sensitive areas based on visual contrast analysis and determining relative proportions of the areas that would be affected.

VRM Class objectives are as follows:

- Class I - To preserve the existing character of the landscape while providing for natural ecological changes. The level of change to the characteristic landscape should be very low and must not attract attention.
- Class II - To retain the existing character of the landscape. Development may be seen, but should not attract attention of the casual observer. Any changes must repeat the elements of form, line, color, and texture found in the predominant natural features of the landscape.
- Class III - To partially retain the existing character of the landscape. Development may attract attention, but should not dominate the view of the casual observer. Changes should repeat the elements of form, line, color, and texture found in the predominant natural features of the landscape.
- Class IV - To provide for development that requires major modification of the existing character of the landscape. Development may dominate the view and be a major focus of viewer attention. Every attempt should be made to minimize the impacts of the development through careful location, minimal disturbance, and repeating the elements of form, line, color, and texture (BLM 1986).

While scenic corridors have been established by Maricopa County for a portion of the non-federal lands that would be affected by the Project, the management of the corridors does not specify visual objectives. Rather, the visual resources of the corridors are managed through land use specifications. Where applicable, the analysis determines compliance with scenic corridor management stipulations.

Neither the City of Peoria nor the Town of Buckeye general plans contain visual management systems. The general plans contain land use stipulations intended to protect natural resources, compliance with which are evaluated in **Section 4.6**. Compliance of the Project with policies specific to visual resources is analyzed.

Visual impacts to non-federal lands from the Project are evaluated utilizing the BLM's visual contrast rating system. The degree of contrast between Project components and the surrounding landscape is described using the descriptions in **Table 4.14-1**.

Table 4.14-1 Degree of Contrast Criteria

CONTRAST CRITERIA LEVEL	DESCRIPTION
None	The element contrast is not visible or perceived.
Weak	The element contrast can be seen but does not attract attention.
Moderate	The element contrast begins to attract attention and begins to dominate the landscape.
Strong	The element contrast demands attention, is not overlooked, and is dominant in the landscape.

Table 4.14-2 defines the terms that are used to describe effects to visual resources.

Table 4.14-2 Summary of Terms Used to Describe Visual Effects

ATTRIBUTE OF EFFECT		DESCRIPTION
Magnitude (Intensity)	Negligible	No measurable change in current conditions. Contrast would be no greater than weak. VRM Class objectives would be met, and there would be no impacts to the VRI, where applicable.
	Minor	A small, but measurable change in current conditions. Contrast would be no greater than moderate. VRM Class objectives would be met, and there would be no impacts to the VRI, where applicable. Areas managed for recreation would have low levels of visual impact and impacts would not be widespread.
	Moderate	An easily discernible and measurable change in current conditions. Contrast would be no greater than moderate to strong; however views would not be dominated on BLM-managed public lands. VRM Class objectives would be met, and there would be no impacts to the VRI, where applicable. Areas managed for recreation would have localized areas of high levels of visual impact. Overall impacts would be moderate if areas of strong impacts and dominance are a relatively small portion of the overall area.
	Major	A large, easily measurable change in current conditions. Contrast would be strong and views would be dominated in areas with sensitive viewers. VRM Class objectives would not be met. Impacts to the VRI, where applicable, would be possible. Areas managed for recreation would have high levels of widespread impact. Overall impacts would be major if areas of strong contrast and/or dominance on BLM-managed lands are a relatively large portion of the overall area, or if an RMPA would be required to change the VRM class.
Duration	Short-term	During construction up to 5 years.
	Long-term	More than 5 years.

A Visual Resource Focus Area was identified to limit the extent of the viewshed analysis to those areas needed to distinguish between the various alternative routes. Also, because the stretch of SR 74 roughly between the Agua Fria River and just past the westernmost crossing

of SR 74 (under the Proposed Action) was determined to be of the greatest visual significance, the viewshed analysis area was refined to this area. More specifically, the analysis area was clipped to roughly six miles north of SR 74 and five miles south of SR74, the Visual Resource Focus Area.

The base elevation was created from two different data sources. The first being high resolution LiDAR (Light Detection And Ranging) data. LiDAR was available only for the immediate Project Area. Since the viewshed analysis needed to extend beyond the range of the LiDAR data area, a U.S. Geologic Survey (USGS) National Elevation Dataset (NED) with 10 meter resolution was available outside the LiDAR area and was used. This was highest resolution data available outside the LiDAR data area.

The viewshed analyses were conducted using Environmental Systems Research Institute (ESRI) ArcGIS and its Spatial Analyst extension. Two different types of viewsheds were performed, the first being a simulation from inside a vehicle driving along SR 74. The perspective height of the driver was assigned to be 4.5 feet (as this was concluded that this height is accurate for a standard vehicle) and the structures were set at 195 feet, which is the estimated maximum height of the proposed monopole structures. The other type of viewshed was from the 195-foot tall structure tops to 4.5 feet above the ground. Though they sound similar, they provide information on two different aspects. For the simulated vehicle to structure view, it shows what can be seen 195 feet above the terrain surface at a given stretch of SR 74. The structures to vehicle view indicates the number of structures that are hypothetically visible at 4.5 feet above the ground surface.

Determination of dominance at the crossings of SR 74 was made by viewing a virtual simulation along SR 74. The virtual simulation was created using ESRI ArcGlobe software where the terrain data was assigned to the base height, and aerial imagery was draped over the base terrain for visual effect. Next, using structure location, three dimensional models of the various proposed monopole were added. This software also allows the viewer to virtually drive down SR 74 and see the structures, with one key limitation, it does not allow the viewer to drive at a speed that can be easily quantified (e.g. miles per hour). To address this issue, a one mile stretch of roadway was created, and the time it took to travel the one mile stretch was determined using a stop watch. Using this information the speed in miles per hour that the simulated car would be traveling at was able to be calculated.

The determination of the point at which the structure becomes dominant in the landscape was made by moving toward or away from the structure from a specific point in the landscape at a slow rate of speed and observing the changes in the landscape. When the factors that define dominance (see **Section 4.14.1.1**) appeared, the distance from the structure was noted. The exercise was repeated at multiple points to assure reliability of analysis.

Where simulations are provided for certain KOPs, the structures are simulated a flat gray color to resemble dulled galvanized steel. Variations in the color of the structures in the simulations are reflected in the description of impacts from variations in distance and lighting.

Completed Visual Contrast Rating Forms for each KOP are contained in **Appendix 4A**.

4.14.2 Direct and Indirect Effects by Alternative

4.14.2.1 Impacts Common to All Action Alternatives

Construction

General Effects

Under all Action Alternatives:

- Trees and tall saguaro cactus would be removed from the ROW area, creating a visible change in the vegetation between the ROW area and surrounding lands. Where ground disturbance would be visible it would appear as bare ground in the short term, and as the disturbed areas revegetate, they may differ in color from the surrounding vegetation.
- A centerline access road would be created along the ROW, along with spur routes to structure locations. Visually these routes would appear as bare ground or two-tracks.
- Spoil material from foundation excavation would be spread around each structure location. The color of excavated material would differ from other surface colors. Vegetation would be crushed or removed during structure construction. Remaining vegetation would be covered by spreading of spoil material, resulting in areas surrounding structures appearing devoid of vegetation and removing shades of green from this part of the landscape. In areas where the viewer is superior – above the area looking down – the change in the vegetation character within the ROW would accentuate the impact of the transmission line in the landscape and help draw attention to it.
- Monopole structures, flat galvanized in color would be erected approximately every 1,100 feet, adding a series of vertical lines to the landscape. The relative strength of the vertical lines would vary with the distance and angle from which they are being viewed.
- Conductors would be non-reflective, but may still be visible in certain circumstances, adding regular, curvilinear horizontal lines to the landscape.
- In areas where no sensitive viewers are identified, the transmission line would strongly contrast with the surrounding environment and dominate the view within a 0.2 to 0.4-mile radius of the line, depending on topography and other landscape characteristics.

Portion of Route Common to All Action Alternatives on BLM-managed Lands

Leaving the Sun Valley Substation, the transmission line would be on BLM-managed public lands designated VRM Class IV and within a designated utility corridor.

KOP 1 - The simulated view from KOP 1 (**Figure 4.14-1b**) looks northeast at the transmission line approximately 0.5-mile away within the BLM utility corridor from Pulte's Festival Ranch development.

The addition of the transmission line to the landscape as viewed from KOP 1 would add a series of strong vertical lines created by the monopole structures, which repeat the vertical lines of the fence in the foreground and contrast strongly with the predominant horizontal lines in the landscape. In the simulation, the conductors are visible and add several subtle horizontal lines to the landscape, which repeat the horizontal line at the skyline as well as the other more subtle horizontal lines in the vegetation patterns. The gray color of the structures would moderately contrast with the predominantly light tans and browns of the landscape. The structures appear smooth, moderately contrasting with most of the vegetation in the landscape that creates a soft, feathery appearance.

The monopoles in the foreground moderately contrast with the faint lattice towers also visible, giving the sense of visual clutter. The area viewed from KOP 1 contains very little development – fencing and faint views of lattice towers. The addition of the transmission line infrastructure would focus the viewer's attention on the transmission line, moderately contrasting with the surrounding largely undeveloped environment.

KOP 2 - The simulated view from KOP 2 (**Figure 4.14-2b**) looks southwest at the transmission line approximately 0.5-mile away within the BLM utility corridor from the Spurlock Ranch development. Similar to KOP 1, the addition of the transmission line to the landscape as viewed from KOP 2 would add a series of strong vertical lines that contrast strongly with the horizontal line at the skyline. In the simulation, the vertical lines of the lattice structures in the background are faint and subdued, and only vaguely repeat the vertical lines of the monopoles. The area viewed from KOP 2 contains very little development – faint views of lattice towers. The transmission line would moderately contrast with the surrounding largely undeveloped environment, and focus the viewer's attention.

Compliance with the Visual Resource Management Class Objectives - As viewed from KOPs 1 and 2, the transmission line would meet the VRM Class IV objectives established for this portion of the Project because the description for the class allows for major modification of the environment that may dominate the view and focus the viewer's attention.

Impacts to the Visual Resources Inventory - The BLM-managed public lands in the southwest corner of the Study Area northeast of the Sun Valley Substation are designated Class III to IV, and are within the North Phoenix Valley Scenic Quality Rating Unit. The VRI indicates that the scenic quality for the unit is C (low) and sensitivity is high. The addition of the transmission line would be a new cultural modification. The unit scored -3 for cultural modification, indicating that any existing modifications may add visual variety to the area and promote disharmony. Considering the fact that the area is already highly culturally modified and that the transmission line would harmonize with existing development, the addition of the transmission line would not affect the Scenic Quality Inventory score, or change the VRI class.

Overall Impact to Route Portions on BLM-managed Public Lands - Within the portion of the route common to all Action Alternatives that is on BLM-managed public lands, the overall contrast would be moderate. VRM Class objectives would be met and there would be no impact to the VRI. Overall impacts to this portion of the route would be minor and long-term.

Portion of Route Common to All Action Alternatives on All Other Lands

KOP 3 - The simulated view from KOP 3 (**Figure 4.14-3b**) looks at the transmission line less than 0.5 mile away crossing US 60 near the BNSF commercial area and the Broadstone Ranch development. Sensitive viewers would be traveling at highway speeds on US 60. The topography is relatively flat and the transmission line would be visible for long distances and become more distinct as viewers approach the crossing. Viewers would likely be able to see the transmission line for a few minutes, but it may not be noticeable for the entire time it would be visible.

The Project would add a series of strong vertical lines created by the monopole structures, which repeat the more subtle vertical lines of the existing monopoles. In the simulation the conductors are visible and add several subtle horizontal lines to the landscape, which repeats the indistinct horizontal line at the skyline. The smooth texture and gray color of the monopoles would blend with the relatively smooth texture of the highway surface and existing monopoles. In this location use of monopoles (as opposed to lattice towers) would harmonize with the existing monopoles. Because most of the lines in the landscape viewed from this KOP are created by the divided highway and elements paralleling it, the greatest contrast would be with the horizontal conductors. The addition of the transmission line would weakly contrast with the surrounding natural environment, add to the sense of development, and further reduces the naturalness of the landscape.

KOP 4 - The simulated view from KOP 4 (**Figure 4.14-4b**) looks east at the transmission line less than 0.5-mile away passing behind the Thunder Ridge Airpark community before turning east to follow the Joy Ranch Road alignment. The monopoles supporting the transmission line would add strong vertical lines to the existing landscape. In the simulation, the lines repeat the existing vertical lines created by the structures and saguaros in the existing landscape. The conductors would create faint horizontal lines that also repeat the horizontal lines in the structures. The smooth gray color of the structures would blend with the colors and textures in the existing developments. Because the existing landscape appears modified and developed, the addition of the transmission line would blend with the existing developments and increase the sense of development, weakly to moderately contrasting with the surrounding developments as the monopoles would be noticeably taller than the surroundings. The additions would not be out of character with the existing development; they do not dominate the view or demand the viewers' attention.

KOP 5 - No simulation was prepared for KOP 5. This KOP represents the view of eastbound travelers on SR 74 traveling at highway speeds, looking south-southeast. At its nearest point, the transmission line would be approximately two miles south of the KOP; however, viewers would be looking southeast, where the line would be over two miles away. Viewers would see the distant view of the transmission line running east and west, paralleling the Joy Ranch Road alignment for several miles.

The addition of the transmission line in the view would add a series of fine short vertical lines. Because of the relatively flat topography and sparse vegetation, the series of structures should be subtly visible paralleling the highway. The lines would appear the same stature of the saguaros in the view, and would repeat the vertical lines of the saguaros. The color of the structures would vary from light gray to almost black depending on the time of day they are

being viewed and the lighting conditions. Depending on the height of the structures, they may or may not contrast with the strong horizontal line at the skyline. Under certain conditions, the structures may not be distinguishable from the saguaros. Because of the distance between the viewer and the transmission line, the line would be a relatively minor addition to the view, contrast would be weak, and the surrounding landscape would effectively absorb the addition.

KOP 6 - No simulation was prepared for KOP 6. Visual effects from this KOP would be similar to those described for KOP 5. This KOP represents the view of east bound travelers on SR 74 traveling at highway speeds, looking east-southeast at the transmission line approximately two miles away. Viewers would see the distant view of the transmission line running east and west, paralleling the Joy Ranch Road alignment, and approaching the SR 74 alignment in the distance. Unlike KOP 5, the structures in the distance to the east approaching the SR 74 alignment would be more noticeable as they are directly ahead in the view of the driver and passengers of eastbound travelers on SR 74, and would contrast with the strong horizontal line at the skyline. Intermittent vegetation alongside the road would partially obscure the structures and views would be intermittently broken. Because of the distance between the viewer and the transmission line, and the intermittent nature of the visibility, contrast would be weak, but would not attract attention and the line would be a minor addition to the view.

KOP 7 - The simulated view from KOP 7 (**Figure 4.14-5b**) looks at the transmission line crossing 211th Avenue approximately 0.5-mile away south of SR 74. Sensitive viewers traveling south on 211th would have just turned off SR 74 and would be accelerating to 35 to 45 miles per hour. The transmission line and its crossing of 211th would be visible until southbound travelers on 211th cross beneath it.

Because there are numerous lines in the existing landscape, the landscape would absorb the addition of the transmission line fairly well. The monopoles supporting the transmission line would add strong vertical lines that blend with several shorter vertical lines created by saguaros and the existing communications tower and weakly to moderately contrast with the horizontal lines at the skyline. The conductors would be faintly visible as horizontal lines that repeat the other horizontal lines in the landscape. The gray color of the monopoles would blend with the dark color of the road surface and saguaros. The main area of contrast would come from the addition of the transmission line in a landscape that appears fairly natural. The infrastructure is most visible and noticeable in the center of the view, and diminishes at the periphery at either side, due to the lack of vegetation within the road perimeter. As drivers continue traveling south on 211th Avenue, the transmission line would become more prominent in the landscape and would eventually dominate the view until drivers pass underneath it. The addition of the transmission line would moderately contrast with the surrounding natural environment, add a sense of development, and reduce the naturalness of the landscape. **Figure 4.14-5c** is discussed and referenced in **Section 4.14.2.6**.

KOP 8 - No simulation was prepared for KOP 8. This KOP represents the view that southbound travelers on the rock crushing/ranch road would have as they approach and come to a stop at the intersection of SR 74, looking south. The transmission line would be following the Joy Ranch Road alignment east, approaching the south side of SR 74. The impact of the addition of the transmission line as viewed from this KOP would be similar to

but less than that described for KOP 19 (for which a simulation was prepared, and is described later in this section), as the distance between the KOP and the line would be greater at this KOP.

Scenic Corridors - No portion of the Proposed Action or Action Alternative routes would be within the SR 74 Scenic Corridor outside the jurisdiction of the City of Peoria; therefore there would be no impact to the SR 74 Scenic Corridor. The portion of the route common to all Action Alternatives would cross the Wickenburg Scenic Corridor. Assuming the standards for the Wickenburg Scenic Corridor would be the same as the SR 74 Scenic Corridor under the Maricopa County Zoning Ordinance, the transmission line would comply with the ordinance under all Action Alternatives.

Overall Impact to Portion of Route Common to All Action Alternatives on All Other Lands - Within the portion of the route common to all Action Alternatives that is on all lands other than those managed by the BLM, the contrast would range from weak to moderate. Overall impacts to this portion of the route would be minor and long-term.

Compliance with Town of Buckeye General Plan

The portion of the Project that would fall within the Town of Buckeye jurisdiction would be common to all Action Alternatives, and would:

- Be within a designated utility corridor on BLM-managed public lands leaving the Sun Valley Substation following the CAP.
- Parallel another existing transmission line north of the CAP between the Festival by Lyle Anderson and Spurlock Ranch developments.
- Be on the eastern boundary of the Town of Buckeye as the route follows the Happy Valley Road alignment to the north.

The proposed route demonstrates proper planning through placement within a designated utility corridor, co-location with an existing transmission line, and by following jurisdictional boundaries, which would minimize impacts to sensitive landscapes.

Operations, Maintenance, and Decommissioning

A centerline access road within the ROW would be allowed to revegetate; however, new vegetation would be crushed when the route is traveled for inspection of or maintenance to the line; this would result in little visual effect. The ROW would be maintained clear of any large trees or cactus, which would result in a long-term visible difference between the ROW and surrounding landscape in areas where trees and saguaros are present in any number. Preventing the ROW from revegetating with trees and saguaros would have a minor long-term impact on visual resources in areas where trees and saguaros are more numerous, as this would prevent the ROW disturbance from fully revegetating and blending with the surrounding landscape.

At the end of the life of the Project the Project components (structures and conductors) would be removed from the Project Area, re-disturbing previously disturbed areas through use of heavy equipment along centerline access and spur routes, resulting in short-term minor impacts to visual resources in areas where the access routes would be visible (in areas where the access routes would be in the foreground or where the viewer is in a superior position).

Areas where vegetation is crushed or removed would be rehabilitated and would revegetate to match the surrounding landscape in the long term, resulting in minor impacts to visual resources in areas where the ROW would be visible.

4.14.2.2 Proposed Action

Amendment of the RMP

Under the Proposed Action, the Bradshaw-Harquahala RMP would be amended to create a single-use utility corridor corresponding to the transmission line ROW on BLM-managed public lands. While the creation of a single-use utility corridor in and of itself would not impact visual resources the installation of a transmission line in that corridor would impact visual resources.

In addition to the utility corridor, the Proposed RMPA would change the VRM Class from VRM Class III to VRM Class IV on 3,375 acres of BLM-managed public lands for the area corresponding to the existing transportation corridor north of SR 74 and on the entire key-shaped piece south of SR 74. Changing the VRM Class of these lands would not have a direct or indirect impact on visual resources or the VRI.

Construction

Portion of Route on BLM-managed Public Lands - Linear KOP

Overview - The concept of the linear KOP is explained in **Section 3.14.5.7**. **Figure 4.14-6** is a viewshed analysis for the Proposed Action route in relation to the linear KOP and its identified viewpoints, and the relative number of structures that would be visible in different areas. This figure demonstrates that at any point along the SR 74 linear KOP, some portion of the transmission line infrastructure would be visible from SR 74, and a range of number of structures that would be visible from any given area. However, it is possible, even likely, that there would be brief periods of time where eastbound or westbound travelers on SR 74 would not be able to see the infrastructure traveling at highway speeds because the visible structures would be behind them and therefore the infrastructure would not be in their field of vision.

Easternmost Crossing and KOP 17b - The simulated view from KOP 17b looks at the easternmost crossing of the transmission line from the south to the north side of SR 74 as it would be viewed by westbound travelers (**Figure 4.14-7b**). Sensitive viewers would be traveling on SR 74 at highway speeds. Because of topography, the top portions of the transmission line would have been visible for a few minutes as the viewers traveled through the gently curving and undulating portion of SR 74 east of the KOP.

The addition of the transmission line in the view would add both strong vertical and horizontal lines through the center of the view and directly in front of the butte, which is the focus of the view. Numerous saguaros create short, dark vertical lines; however, the size and color of the structures are of such magnitude that they do not repeat the vertical lines in the landscape. The horizontal lines created by the conductors would be subtle, but would be in front of the undulating horizontal line at the skyline, and therefore contrast strongly. The structures appear cylindrical and uniform, and would moderately contrast with the feathery to stippled appearance of the vegetation. The infrastructure interjects a sense of development

that would moderately contrast with the natural and scenic appearing landscape. Overall contrast of the transmission line with the surrounding landscape would be moderate.

The area is currently designated VRM Class III. Travelers on SR 74 would be traveling at highway speeds of 65 mph or more, limiting the amount of time that they would be viewing the transmission line. **Figure 4.14-8** is a viewshed analysis of the easternmost crossing of SR 74 by the transmission line following the Proposed Action route. This figure shows where along SR 74 the crossing would be visible, and for how long by direction of travel.

When the transmission line is located at the periphery of the ACC-certificated route and when the crossing is in the distance, topography and vegetation would limit views of the infrastructure and distance would reduce its prominence in the landscape; under these conditions the transmission line would not dominate the view, and the Project would meet the VRM Class III objectives. As travelers in either direction on SR 74 approach the crossing, at some point the crossing would become prominent and dominate the view until the traveler passes under the crossing and it is no longer visible.

As travelers on SR 74 approach the crossing, it would become dominant in the landscape when:

- Structures on either side of the SR 74 are visible.
- The structures intersect the skyline creating strong contrast between the vertical line of the structures and the horizontal line of the skyline.
- The structures appear larger than other landscape elements due to proximity of the viewer to the structures.
- The structure characteristics – the cross-arms and structures holding the conductors – become visible.

Figure 4.14-8 indicates that, within approximately 0.3-mile either side of the crossing for a total of 0.6-mile of SR 74, the above criteria are present and the transmission line would dominate the view; VRM Class III objectives would not be met. The length of SR 74 within the linear KOP is 10 miles long; approximately 6 percent of the length of SR 74 within the linear KOP would not meet VRM Class III objectives due to the easternmost crossing. However, the transmission line would meet VRM Class IV objectives that would be in place for this area as a result of the Proposed RMPA to change the VRM Class from III to IV.

KOP 17c - The simulated view from KOP 17c looks at the transmission line paralleling the north side of SR 74 as it would be viewed by westbound travelers (**Figure 4.14-9b**). Sensitive viewers would be traveling on SR 74 at highway speeds. Because of topography, the top portions of the transmission line would be visible for a few minutes as the viewers travel through the gently curing and undulating portion of SR 74 east of the KOP, and the westbound viewer would have recently passed under the easternmost crossing.

The addition of the transmission line in the view would add a series of vertical lines in the middle ground. Due to the distance between the KOP and the infrastructure, the conductors would not be visible and the structures would appear as fine, light-colored lines against the landscape in the background. Under different lighting conditions the structures could appear lighter or darker, and be more or less noticeable. The vertical lines of the structures weakly

contrast with the curvilinear horizontal lines in the landscape, and somewhat repeat the vertical lines created by the numerous saguaros. The distance between the KOP and the structures and the somewhat complex landscape would allow the landscape to absorb the infrastructure. Overall contrast of the transmission line with the surrounding landscape would be weak.

The structures visible in the landscape would be located on BLM-managed public lands within the transportation corridor north of SR 74. The area is currently designated VRM Class III. As viewed from KOP 17c, the transmission line infrastructure would be noticeable, and portions may be more or less noticeable and attract attention under different lighting conditions. However, the Project would not dominate the view, and therefore would meet VRM Class III objectives.

KOP 18a - No simulation was prepared for KOP 18a, which is the entry point for the linear KOP for eastbound travelers on SR 74. Sensitive viewers would be traveling on SR 74 at highway speeds. At the linear KOP entry point the topography is transitioning from relatively flat and open to the west, to hilly and undulating to the east. Eastbound travelers on SR 74 from this KOP would see the transmission line infrastructure approaching SR 74 from the south, and then crossing to the north side of SR 74. The structures would be visible as a series of regularly spaced medium to strong vertical lines. The structures would intersect and weakly to moderately contrast with the irregular horizontal line at the skyline. The scenic nature of the landscape would help absorb the addition of the transmission line as viewed from this KOP, but the addition of the human development would moderately contrast with the surrounding natural environment. The appearance of the color of the structures would vary with the lighting conditions, but would weakly contrast either with the surrounding landscape or bright sky under any circumstance. Overall contrast of the transmission line with the surrounding landscape would be weak to moderate.

A portion of the structures would be on BLM-managed public lands designated VRM Class III. The structures would be noticeable and may attract attention, but because of the distance between the KOP and the structures, the transmission line would not dominate the view, and would meet VRM Class III objectives as viewed from KOP 18a.

Westernmost Crossing and KOP 18b - The simulated view from KOP 18b looks at the westernmost crossing of the transmission line from the south side to the north side of SR 74, then paralleling SR 74 going into the distance, as viewed by eastbound travelers (**Figure 4.14-10b**). Sensitive viewers would be traveling on SR 74 at highway speeds. Because eastbound travelers would be approaching the westernmost crossing from relatively flat and open terrain, the crossing would be visible in the distance for a few minutes before it became very noticeable.

The addition of the transmission line in the view would add strong vertical and horizontal lines at the crossing in the foreground, and a series of vertical lines that are less prominent to the north of SR 74. The structures in the foreground would appear taller than the landscape in the background and contrast strongly with the undulating horizontal line at the skyline. The series of structures to the north of SR 74 would be more distant, appear smaller, and somewhat repeat the vertical lines created by the numerous saguaros. The light color and smooth texture of the structures would distinguish them from the surrounding darker and

textured landscape. Overall contrast of the transmission line with the surrounding landscape would be strong.

The area is currently designated VRM Class III. Travelers on SR 74 would be traveling at highway speeds of 65 mph or more, limiting the amount of time that they would be viewing the westernmost crossing of the transmission line. **Figure 4.14-11** is a viewshed analysis of the westernmost crossing of SR 74 by the transmission line following the Proposed Action route. This figure shows where along SR 74 the crossing would be visible and for how long by direction of travel.

As stated in the discussion of the easternmost crossing above, as travelers in either direction on SR 74 approach the crossing, at some point the crossing would become prominent and dominate the view until the traveler passes under the crossing and it is no longer visible. **Figure 4.14-11** indicates that the crossing would dominate the view, for approximately 0.40-mile either side of the crossing for a total of 0.80-mile of SR 74, where the criteria are present, and the VRM Class III objectives would not be met. The length of SR 74 within the linear KOP is 10 miles long; approximately eight percent of the length of SR 74 within the linear KOP would not meet VRM Class III objectives due to the westernmost crossing. However, the transmission line would meet VRM Class IV objectives that would be in place for this area as a result of the Proposed RMPA to change the VRM Class from III to IV.

KOP 18c - The simulated view from KOP 18c looks at the transmission line north of SR 74 as viewed by eastbound travelers (**Figure 4.14-12b**). Sensitive viewers would be traveling on SR 74 at highway speeds. Because of topography, the top portions of the transmission line would have been visible for a few minutes as the viewers traveled through the gently curving and undulating portion of SR 74 west of the KOP. The transmission line would be visible in the view from this KOP, but it would not be noticeable and nearly impossible to locate in the photo simulation. Topography would block foreground to middleground views of the transmission line; the structures would appear in the background as very small, fine light colored vertical lines that repeat the delineators in the foreground, and are thus difficult to locate. Contrast between the transmission line and the surrounding landscape would be unnoticeable, and therefore would meet VRM Class III objectives.

Overall Compliance with Visual Resource Management Class Objectives within the Linear KOP - The portion of the BLM-managed public lands within the existing transportation corridor north of SR 74 and the key-shaped piece south of SR 74 are currently designated VRM Class III. BLM-managed public lands north of the transportation corridor are currently designated VRM Class II. This area is within the SRMA and there are numerous OHV routes within the area (see **Section 3.9** and **Figure 3.9-3**). It is reasonable to expect that recreational users would be viewing the transmission line from any point in this area and not just from the KOPs (and not even primarily from the KOPs). Therefore, visual dominance of the line within this area is important to the impact analysis.

Using the simulation tool described in **Section 4.14.1.2**, it was determined that the transmission line would dominate the view within approximately 800 feet of each structure when viewed from points within the landscape surrounding the proposed ROW north of SR 74. Structures would average a distance of 1,100 feet apart, but would be much closer together under certain topographic conditions. For analysis purposes, it is estimated that the

view would be dominated (as defined in **Section 4.14.1.1**) in areas within 800 feet of the centerline of the ROW (**Figure 4.14-13**). This area north of SR 74 totals 1,108 acres, of which an estimated 1,095 acres would be within the VRM Class III designated area, and 13 acres would be within the VRM Class II designated area. The VRM Class III area north of SR 74 (currently designated as a transportation corridor) is comprised of 2,354 acres. The acreage where the transmission line would dominate the view, and therefore not meet Class III objectives, represents an estimated 50 percent of the VRM Class III designated area north of SR 74.

Visual dominance of the transmission line in the landscape in this area would be a major impact to visual resources in the VRM Class III area and a negligible impact in the VRM Class II area. However, the transmission line would meet VRM Class IV objectives that would be in place for the existing transportation corridor as a result of the Proposed RMPA to change the VRM Class from III to IV.

The VRM Class III lands south of SR 74 total 1,013 acres. Under the Proposed Action, an estimated 269 acres would be visually dominated by the transmission line. The acreage where the transmission line would dominate the view, and therefore not meet Class III objectives, represents approximately 26 percent of the VRM Class III designated area south of SR 74. Visual dominance of the transmission line in the landscape in this area would be a minor impact to visual resources in the VRM Class III area south of SR 74. However, the transmission line would meet VRM Class IV objectives that would be in place for this area south of SR 74 as a result of the Proposed RMPA to change the VRM Class from III to IV.

Overall Impact to Route Portion on BLM-managed Public Lands within the Linear KOP - The portion of the route within the Linear KOP would have areas of strong contrast where the Project would dominate the view. Existing VRM Class objectives would not be met on approximately 50 percent of the BLM-managed public lands within the transportation corridor north of SR 74 and 26 percent of the lands south of SR 74 designated VRM Class III; however, there would be no impact to the VRI. The transmission line would meet VRM Class IV objectives that would be in place for these areas as a result of the Proposed RMPA to change the VRM Class from III to IV. Overall impacts to visual resources in this portion of the route under the Proposed Action would be major and long-term.

Portion of Route on BLM-managed Public Lands - Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ

Section 3.9 provides an overview of the Castle Hot Springs SRMA and the Hieroglyphic Mountains RMZ. These areas are heavily used for recreation and are sensitive to visual changes in the landscape. **Figure 4.14-6** shows a viewshed analysis for the Proposed Action route in relation to the recreation areas and KOPs for those recreation areas.

KOP 10 - KOP 10 is located within the SRMA and RMZ. Sensitive viewers would be recreationists preparing to leave from The Boulders Staging Area. They would have reached the staging area via SR 74 where they may have seen portions of the line in the distance or passed beneath the crossings, depending on their direction of travel. Viewers would be parked in the parking lot, focused on their preparations, with views of the transmission line to the southeast over a mile away.

The simulated view from KOP 10 (**Figure 4.14-14b**) looks at the transmission line paralleling the south side of SR 74. The monopoles would appear as a series of short vertical lines in the middle ground that break the skyline where there is not a backdrop of mountains, and repeat the short vertical lines created by the numerous saguaros. Where the monopoles break the skyline, the vertical lines would contrast strongly with the horizontal line at the skyline. From this distance and under these lighting conditions, the conductors would not be visible.

In the simulation, the scene is backlit, resulting in the monopoles appearing light gray and contrasting with the background of the gray-green colors in the vegetation in the middle ground. Some development is visible as dots in the background, but because the development is distant it appears to be a subtle and small part of the view. The transmission line in the middle ground would not appear to be a continuation of the development in the foreground or background, rather new development in the middle ground; it would add a sense of development, moderately contrasting with the natural appearing and scenic view.

While KOP 10 is located within the SRMA and RMZ, the portion of the Project visible from KOP 10 would not be on BLM-managed public lands; therefore, determination of compliance with VRM class objectives is not applicable.

KOP 12 - The simulated view from KOP 12 (**Figure 4.14-15b**) looks from the Quintero Golf Course at the proposed westernmost crossing to the north side of SR 74. Sensitive viewers would be golfers or residents of Quintero who are moving at low rates of speed and viewing the transmission line to the southeast approximately one mile away.

The monopoles supporting the transmission line would be most easily seen in this KOP where they are visible against the sky. Many of the structures would be against a backdrop of distant mountains and are nearly invisible. The gray color of the structures would blend well with the distant land forms. Where structures would be visible, the vertical lines they create would blend well with the numerous short vertical lines created by the saguaros. The area of moderate contrast between the monopoles and surrounding landscape would be limited to a portion of the view; the complexity and scenic nature of the view absorbs most of the transmission line with little effect to the scenic quality. As the viewer pans to the south and west the topography flattens out and the monopoles would become skylined and more noticeable in the distance. In the evening when the lighting is different, they may appear lighter in color and some structures may be more noticeable against the backdrop of the mountains, while structures that are skylined may be less noticeable. For the majority of the view the transmission line would be absorbed by the surrounding landscape, and where visible, would only weakly contrast.

The area is currently designated VRM Class III. As viewed from KOP 12, the transmission line infrastructure would be noticeable, and portions may be more or less noticeable and attract attention under different lighting conditions. However, the Project would not dominate the view, and therefore would meet VRM Class III objectives.

KOP 13 - KOP 13 is located within the SRMA but not within the RMZ. The simulated view from KOP 13 (**Figure 4.14-16b**) looks at the transmission line crossing BLM-managed public lands north of SR 74 within the transportation corridor currently designated VRM Class III. Sensitive viewers would be recreationists within the SRMA who have reached the

KOP via single-track OHV or by foot. Viewers would be standing still or moving at low rates of speed, looking at the transmission line nearly a mile away to the southwest.

The addition of the transmission line in the view would add a series of strong vertical lines that strongly contrast with the horizontal lines that are predominant in the view. From the perspective of this KOP, only one structure would break the skyline, and the structures would not appear larger than the surrounding landscape elements. **Figure 4.14-16c** is discussed and referenced in **Section 4.14.2.4**.

While there are numerous saguaros in the view they would be dwarfed by the size of the monopoles, and the repetition of the vertical lines and dark colors is subtle. The conductors would be faintly visible along the nearest monopoles, adding very subtle horizontal lines. Panning to the left, the viewer would see the transmission line scaling the nearby low hills with the structures and conductors skylined. In the simulation photo, the structures are backlit, resulting in them appearing dark and harmonizing with the darker colors in the landscape. Under different lighting conditions the color of the structures may appear light gray or white and contrast with the surrounding landscape. The construction of the transmission line would remove vegetation and expose land. During the Operations and Maintenance phase, the ROW would be maintained clear of taller growing vegetation. From this KOP, these changes would be visible as a narrow strip of bare ground or different vegetation color than surrounding vegetation, depending on the stage of revegetation. Overall contrast of the transmission line with the surrounding landscape would be strong.

From KOP 13 the transmission line attracts attention, but it would not dominate the view, and therefore it would meet VRM Class III objectives.

KOP 20 - The simulated view from KOP 20 (**Figure 4.14-17b**) looks at the transmission line paralleling the south side of SR 74 south of the intersection of Castle Hot Springs Road and SR 74. Sensitive viewers would be east-or westbound travelers on SR 74 slowing to turn north onto Castle Hot Springs Road, or travelers on Castle Hot Springs Road approaching the intersection with SR 74 and slowing to a stop. Viewers would be looking at the transmission line 0.25-mile away or less.

The addition of the transmission line in the view would add a structure and conductors in the foreground, just behind a low hill adjacent to SR 74, with structures and conductors going into the distance looking either direction (east or west). The structure would somewhat repeat the vertical line of the saguaros in the landscape; however, the structure would be much larger, regular shaped, smooth, and differ in color, resulting in a strong contrast. The structure would contrast moderately with the undulating horizontal line at the skyline. The horizontal lines created by the conductors would repeat the strong horizontal line created by the road and guard rail, and the undulating line at the skyline to a limited extent. The color of the structure would blend to a limited extent with some of the colors seen in the vegetation, but its smooth texture would moderately contrast with the variety of textures in the landscape. Overall contrast of the transmission line with the surrounding landscape would be moderate to strong.

The area is currently designated VRM Class III. Travelers on Castle Hot Springs Road approaching this intersection would be slowing and coming to a stop. Because the transmission line would be in the center of the field of view, its proximity to other landscape

features make it appear larger than its surroundings and because travelers would come to a stop looking straight ahead, the transmission line would dominate the view from KOP 20 and would not meet VRM Class III objectives. However, this situation would only last as long as the vehicle is stopped at the intersection (a few seconds or up to a couple of minutes while waiting for traffic to clear), until the traveler turns east or west on SR 74. The transmission line would meet VRM Class IV objectives that would be in place for this area as a result of the Proposed RMPA to change the VRM Class from III to IV.

Overall Visual Impacts to the Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ - Recreationists within the SRMA and RMZ are almost exclusively engaging in some form of motorized recreation. Recreationists would be viewing the landscape containing the transmission line from moving OHVs or when stopped. As indicated by **Figure 4.14-6**, the transmission line would be frequently visible in the southern portion of the SRMA, with diminishing views at greater distances to the north. The greatest number of structures would be sparsely visible from the highest points within the SRMA and RMZ. The Project would be most consistently visible and to the greatest extent in the southwest portion of the visual resources focus area. The view within the SRMA would be dominated in areas closer to the ROW frequented by recreation users. For recreational users within the SRMA, the transmission line begins to dominate the view within approximately 800 feet of the line. Further than 800 feet away from the line, the transmission line would begin to become proportional to the surrounding landscape, and the complexity of the landscape absorbs them, so that they no longer dominate the view. Approximately 1,095 acres of the SRMA and none of the RMZ would be within 800 feet of the line and would have views dominated by the line. This acreage represents approximately one percent of the 112,340 acres of the SRMA that are within the Recreation and Special Designations Study Area. Because of the limited area where the transmission line would dominate the view and the nature of OHV recreation occurring within the SRMA, overall visual impacts to the visual resources would be moderate and long-term.

The transmission line would be most consistently visible and to the greatest extent in the southwest portion of the RMZ; however, the view would not be dominated in any portion of the RMZ. Because of the distance between the viewers and the Project, and the fact that the view would not be dominated within the RMZ, visual impacts within the RMZ would be minor and long-term.

Portion of Route on BLM-managed Public Lands - Impact to the Visual Resource Inventory

As described in **Section 3.14.2**, there is a VRI for the BLM-managed public lands within the Study Area. The portion of the Proposed Action route visible from KOPs 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17a, 21, and 22 would not be on BLM-managed public lands, therefore determination of compliance with VRM class objectives and analysis of impacts to VRI is not applicable.

The BLM-managed public lands north and south of SR 74 within the Study Area are within the Hieroglyphic Mountains Scenic Quality Rating Unit. The VRI indicates that the scenic quality for the unit is B (moderate) and sensitivity is high. The addition of the transmission line would be a new cultural modification. The unit scored zero for cultural modification,

indicating that any existing modifications add little or no visual variety to the area and introduce no discordant elements.

Part, if not all of the monopoles visible in the landscape from KOP 12 would be located on BLM-managed public lands within the transportation corridor north of SR 74. While the transmission line would add a discordant element, the complexity and scenic nature of the view from KOP 12 would absorb the addition of the transmission line with little effect to scenic quality.

The views of the transmission line as viewed by recreational viewers in the SRMA are represented by KOP 13, where the transmission line would attract attention but not dominate the view. However, as described above, the transmission line would dominate the view of about 1,100 acres of BLM-managed public lands north of SR 74 under the Proposed Action. Within the area where the transmission line would dominate the view, it would be a very discordant element.

The transmission line at the SR 74 crossings would add a strong discordant element of development into a view that otherwise appears very natural. However, the easternmost crossing only dominates the view for less than a mile, or six percent of the linear KOP; and the westernmost crossing only dominates the view for less than a mile, or eight percent of the linear KOP. While the scenic quality of this portion of BLM-managed public lands would be significantly impacted by the addition of the transmission line crossing, the area that would be affected is limited.

The transmission line as viewed from KOP 18c would have no discernible impact on the landscape, therefore, no impact to the VRI is indicated as viewed from this KOP.

As viewed from KOP 20, the transmission line would be in the center of the field of view, its proximity to other landscape features would make it appear larger than its surroundings, and because travelers would come to a stop looking straight ahead, the transmission line would dominate the view from KOP 20 and would introduce discordant elements. However, this situation would only last as long as the vehicle is stopped at the intersection (a few seconds or up to a couple of minutes while waiting for traffic to clear), until the traveler turns east or west on SR 74.

As observed from the KOPs, the addition of the transmission line would score between zero and -4 for cultural modification at each KOP, depending on the viewpoint. Considering the acreage of the greatest visual impact (where the transmission line would dominate the view within the SRMA and along portions of SR 74) is limited, and relatively small in comparison to the extent of the entire scenic quality rating unit (SQRU), the change in the score for the SQRU would be small and would not affect the Scenic Quality rating assigned to the SQRU.

Portion of Route on All Other Lands

<u>KOP 11</u> - KOP 11 is located on State Trust lands within the SRMA and RMZ; however, the portion of the transmission line that would be viewed from this KOP is not located on BLM-managed public lands. Sensitive viewers would be recreationists, most likely those accessing the point via OHV. Viewers would be standing still or traveling at low rates of speed, looking at the transmission line at least four miles away to the south.

The simulated view from KOP 11 (**Figure 4.14-18b**) looks at the transmission line paralleling the south side of SR 74. Under the lighting conditions present at the time the simulated photo was taken, the transmission line would not be visible. Under different lighting conditions the structures may appear lighter or darker and may be visible in the landscape, appearing as tiny vertical lines in the middle ground to distance. Because the view from KOP 11 is viewer superior, the structures would be viewed against topography in the background, which would reduce the visibility of the structures under many lighting conditions. The construction of the transmission line would remove vegetation and expose land. During the Operations and Maintenance phase, the ROW would be maintained clear of taller growing vegetation. From this KOP, these changes would be visible as a thin line of bare ground or different vegetation color than surrounding vegetation, depending on the stage of revegetation. Because of the distance between the KOP and the Project, the transmission line would be a very small part of the overall view. If the viewer were standing at the KOP and unfamiliar with the area and for OHV recreationists traveling on the trails, the transmission line would not be noticeable. From KOP 11, the visual impact of the transmission line would be at the lowest levels of detection, and impacts would be negligible and long-term.

KOP 17a - No simulation was prepared for KOP 17a, which is the entry point for the linear KOP for westbound travelers on SR 74, who would be traveling at highway speeds. Viewers from this KOP would see the transmission line infrastructure coming in from the south perpendicular to SR 74, and then paralleling the south side of SR 74 approximately 0.5-mile away, going into the distance looking west. The structures would be visible as a series of regularly spaced short fine vertical lines. The structures would have landscape behind them and would not be skylined, resulting in weak to moderate contrast. The complexity and scenic nature of the landscape would absorb the addition of the transmission line as viewed from this KOP. The addition of the vertical elements from the structures would weakly contrast with the horizontal elements in the view, the impact of which would be minimized by the distance between the viewer and the transmission line. The appearance of the color of the structures would vary with the lighting conditions. When the structures are front lit they may appear lighter and moderately contrast with the darker colors in the background. When the structures are backlit they would appear darker, which would reduce their visibility in the landscape. Overall contrast of the transmission line with the surrounding landscape would be weak to moderate.

KOP 19 - The simulated view from KOP 19 (**Figure 4.14-19b**) looks at the transmission line paralleling the south side of SR 74 looking south from the intersection of the Quintero access road and SR 74. Sensitive viewers would be travelers on SR 74 slowing to turn at the intersection or travelers on the Quintero access road approaching and stopping at the intersection. Viewers would be looking at the transmission 0.25-mile away or less.

The addition of the transmission line in the view would add a structure and conductors in the foreground to middle ground, with structures and conductors going into the distance looking either direction (east or west). The structure would somewhat repeat the vertical line of the saguaros in the landscape; however, the structure would be much larger, regular shaped, smooth, and differ in color. The structure would contrast moderately with the subtle irregular horizontal line created by the mountain range in the distance at the skyline. The horizontal

lines created by the conductors would repeat the strong horizontal line created by the road striping. Under the lighting conditions at the time of the photo used for the simulation, the light color of the structure contrasts moderately with the darker color of the saguaros; however, the light color of the structure reduces the contrast with the sky. The smooth texture of the structure would contrast moderately with the variety of textures in the landscape. Overall contrast of the transmission line with the surrounding landscape would be moderate.

Travelers on the Quintero access road approaching this intersection would be slowing and coming to a stop. Because the transmission line would be in the center of the field of view, its proximity to other landscape features would make it appear larger than its surroundings; however, this situation would only last as long as the vehicle is stopped at the intersection (a few seconds or up to a couple of minutes while waiting for traffic to clear), until the traveler turns east or west on SR 74.

Overall Impact to Portion of Route on All Other Lands - Within the portion of the route that is on all lands other than those managed by the BLM, the contrast would range from weak to moderate. Overall impacts to this portion of the route would be minor and long-term.

Overall Impact to Portion of SR 74 within the Linear KOP

As demonstrated by **Figure 4.14-6**, some portion of the Project would be visible from almost any point along SR 74. However, as the figure indicates, the number of structures visible for the majority of the segment of SR 74 would be relatively low. Due to the distance between SR 74 and the proposed ROW, a portion of many of the structures would not be visible, obscured by topography; in many cases viewers from SR 74 would be seeing the tops of the structures. Approximately 14 percent of the portion of SR 74 within the linear KOP would have views dominated by the transmission line in conjunction with the easternmost and westernmost crossings. Aside from the crossings and those areas immediately north of the crossings, the views along SR 74 would not be dominated by the transmission line. The overall impact to the visual resources along the portion of SR 74 within the linear KOP under the Proposed Action would be moderate and long-term.

Impacts to the Visual Resources of Lake Pleasant Regional Park

KOP 16 - The simulated view from KOP 16 (**Figure 4.14-20b**) looks at the transmission line paralleling the south side of SR 74, west of the Morgan Substation. Sensitive viewers would be recreationists standing still or moving at low rates of speed in the campground looking at the transmission line approximately two miles away. The addition of the transmission line in the view would add a series of evenly spaced short vertical lines in the middle ground following the horizontal line of the road cut. The conductor would not be visible given the distance from the KOP. The lines in the landscape are predominantly horizontal and irregular; however, the contrast with the horizontal lines would be minimized by the fact that the vertical lines of the structures only intersect the subtle horizontal lines at a couple of points. The landscape is somewhat complex with numerous hills and a mountain range in the background, which would absorb the fine, light colored lines of the structures. Under the conditions that the photo was taken, the structures would be side lit, and appear light against the landscape. The light color contrasts moderately with the dark background, which makes the structures more noticeable and distinctive from other landscape features. Under different lighting conditions the structures would appear darker and repeat the vertical lines created by

the saguaros in the foreground, reducing the color contrast. Overall contrast of the transmission line with the surrounding landscape would be weak to moderate. The majority of Lake Pleasant Regional Park lies to the north of KOP 16. Visibility of the transmission line would be blocked in many cases (see **Figure 4.14-6**). Where the line would be visible, distance of the viewer from the line would make the infrastructure difficult to distinguish in the landscape. Impacts to the visual resources of Lake Pleasant Regional Park would be negligible to minor and long-term.

Compliance with City of Peoria General Plan

Within the City of Peoria boundaries, the Proposed Action route would utilize the SR 74 transportation corridor and would comply with the City of Peoria General Plan.

Operations, Maintenance, and Decommissioning

Impacts from operations, maintenance and decommissioning under the Proposed Action would be the same as those described in **Section 4.14.2.1**.

4.14.2.3 Alternative 1: Proposed Action with Additional Corridor

Amendment of the RMP

Under Alternative 1, the Bradshaw-Harquahala RMP would be amended to designate the existing transportation corridor on BLM-managed lands north of SR 74 and the entire key-shaped piece of BLM lands south of SR 74 to also be a multiuse utility corridor. Designation of a utility corridor would not directly or indirectly impact the visual resources. However, co-location of future utilities within the proposed additional corridor could impact additional visual resources located on these lands. Any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation (similar to that described for the proposed Project) would minimize additional impacts to visual resources. In addition to the utility corridor, the Proposed RMPA would change the VRM Class from VRM Class III to VRM Class IV on 3,375 acres of BLM-managed public lands for the area corresponding to the existing transportation corridor north of SR 74 and on the entire key-shaped piece south of SR 74. Changing the VRM Class of these lands would not have a direct or indirect impact on visual resources or the VRI.

Construction, Operations, Maintenance, and Decommissioning

Impacts from construction and operations, maintenance, and decommissioning under Alternative 1 would be the same as those described in **Section 4.14.2.2**.

4.14.2.4 Alternative 2: ROW South of SR 74

Amendment of the RMP

Under Alternative 2, the Bradshaw-Harquahala RMP would be amended to designate the entire key-shaped piece of BLM-managed public lands south of SR 74 as a multiuse utility corridor. The proposed transmission line ROW would be within this multiuse utility corridor. Designation of a multiuse utility corridor south of SR 74 would not directly or indirectly impact the visual resources or the VRI. However, co-location of future utilities within the proposed additional corridor could impact additional visual resources located on these lands.

Any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation (similar to that described for the proposed Project) would minimize additional impacts to visual resources.

In addition to the utility corridor, the Proposed RMPA would change the VRM Class from VRM Class III to VRM Class IV on 1,013 acres of BLM-managed public lands for the entire key-shaped piece south of SR 74. Changing the VRM Class of these lands would not have a direct or indirect impact on visual resources or the VRI.

Construction

Portion of Route on BLM-managed Public Lands - Linear KOP, Castle Hot Springs SRMA

Overview - The concept of the linear KOP is explained in **Section 3.14.5.7**. **Figure 4.14-21** is a viewshed analysis for the Alternative 2 route in relation to the linear KOP and its identified viewpoints, and the relative number of structures that would be visible in different areas. A comparison of **Figure 4.14-21** with **Figure 4.14-6** (viewshed analysis of the Proposed Action route) shows that the overall viewshed impacts of Alternative 2 in terms of areas where the transmission line would be visible and number of structures visible in different areas, would be very similar to the impacts of the Proposed Action route.

Similar to the Proposed Action, **Figure 4.14-21** also demonstrates that at any point along the SR 74 linear KOP, some portion of the transmission line infrastructure would be visible from SR 74. However, it is possible, even likely, that there would be brief periods of time where eastbound or westbound travelers on SR 74 would not be able to see the infrastructure traveling at highway speeds because the visible structures would be behind them and therefore the infrastructure would not be in their field of vision.

KOP 20 - The visual impacts of the transmission line as viewed from KOP 20 would be the same as described in **Section 4.14.2.2**.

Overall Compliance with Visual Resource Management Class Objectives within the Linear KOP - The portion of the BLM-managed public lands south of SR 74 is currently designated VRM Class III. This area is within the SRMA and is used by OHV recreationists. It is reasonable to expect that recreational users would be viewing the transmission line from any point in this area. Therefore, visual dominance of the line within this area is important to the impacts analysis.

Using the simulation tool described in **Section 4.14.1.2**, it was determined that the transmission line would dominate the view within an estimated 800 feet of each structure when viewed from points within the landscape surrounding the proposed ROW south of SR 74. Structures would average a distance of 1,100 feet apart, but would be much closer together under certain topographic conditions. For analysis purposes, it is estimated that the view would be dominated (as defined in **Section 4.14.1.1**) in areas within 800 feet of the centerline of the ROW (**Figure 4.14-22**). This area south of SR 74 totals 1,013 acres, of which the view is dominated and the transmission line would not meet VRM Class III objectives on an estimated 370 acres, and represents 36 percent of the VRM Class III designated area south of SR 74. Visual dominance of the transmission line in the landscape in this area would be a major impact to visual resources in the VRM Class III area. However,

the transmission line would meet VRM Class IV objectives that would be in place for this area as a result of the Proposed RMPA to change the VRM Class from III to IV.

Overall Visual Impacts to Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ - Impacts to the SRMA and RMZ would be similar to those described in **Section 4.14.2.2**; however, under Alternative 2 the transmission line would be south of SR 74, increasing the distance between the majority of recreation viewers north of SR 74 and the transmission line, somewhat reducing the visual effect in the SRMA and RMZ. The transmission line would dominate the views in a portion of the SRMA, located south of SR 74, but this area would represent less than 0.1 percent of the SRMA. The view would not be dominated in any portion of the RMZ. Because of the distance between the viewers and the Project, the acreage of dominance within the SRMA is very small, visual impacts within the SRMA would be moderate and in the RMZ would be negligible under Alternative 2.

Portion of Route on BLM-managed Public Lands – Impacts to Visual Resource Inventory

As described in **Section 3.14.2**, there is a VRI for the BLM-managed public lands within the Study Area. Although KOPs 17d and 18d are located on BLM-managed public lands north of SR 74, the portion of the Alternative 2 route visible from these KOPs would not be on BLM-managed public lands, therefore determination of compliance with VRM class objectives and analysis of impacts to VRI is not applicable.

The BLM-managed public lands north and south of SR 74 within the Study Area are within the Hieroglyphic Mountains Scenic Quality Rating Unit. The VRI indicates that the scenic quality for the unit is B (moderate) and sensitivity is high. The addition of the transmission line would be a new cultural modification. The unit scored zero for cultural modification, indicating that any existing modifications add little or no visual variety to the area and introduce no discordant elements.

As viewed from KOP 20, the transmission line would be in the center of the field of view, its proximity to other landscape features would make it appear larger than its surroundings, and because travelers would come to a stop looking straight ahead, the transmission line would dominate the view from KOP 20 and would introduce discordant elements. However, this situation would only last as long as the vehicle is stopped at the intersection (a few seconds or up to a couple of minutes while waiting for traffic to clear), until the traveler turns east or west on SR 74.

Impacts to the VRI would be similar to those described for the Proposed Action in **Section 4.14.2.2**; however, the amount of acreage where the transmission line would dominate the view would be less than under the Proposed Action.

Overall Impact to Portion of Route on BLM-managed Public Lands

The portion of the Alternative 2 route on BLM-managed public lands would have areas of strong contrast where the Project would dominate the view. VRM Class objectives would not be met on approximately 36 percent of BLM-managed public lands currently designated VRM Class III south of SR 74; however, the transmission line would meet VRM Class IV objectives that would be in place for this area as a result of the Proposed RMPA to change the VRM Class from III to IV. There would be no impact to the VRI. Overall impacts to this portion of the route would be major and long-term.

Portion of the Route on All Other Lands

KOPs 10 and 11 - The visual impacts of the transmission line as viewed from KOPs 10 and 11 would be the same as described in **Section 4.14.2.2**.

KOP 12 - No simulation was prepared for KOP 12 viewing the Alternative 2 route. Sensitive viewers would be golfers or residents of Quintero who are moving at low rates of speed and viewing the transmission line to the southeast approximately one mile away. As viewed from KOP 12, the Alternative 2 route would be paralleling the south side of SR 74, looking southeast. Compared to the simulation for the Proposed Action (**Figure 4.14-15b**), the closest and most prominently visible structures in the left portion of the view would not be present under Alternative 2. The structures that would be barely visible and unnoticeable against the backdrop of mountains would continue into the distance. Under different lighting conditions the structures may be more visible and may even be noticeable. Because the structures would not be expected to be skylined, or would be very distant if skylined, contrast with the surrounding landscape would be weak if any. Overall impacts to visual resources as viewed from this KOP under Alternative 2 would be negligible and long-term.

KOP 13 - The simulated view from KOP 13 (**Figure 4.14-16c**) looks at the transmission line crossing private lands south of SR 74. Sensitive viewers would be recreationists within the SRMA who have reached the KOP via single-track OHV or by foot. Viewers would be standing still or moving at low rates of speed, looking at the transmission line nearly a mile away to the southwest.

The addition of the transmission line in the view would add a series of vertical lines that weakly to moderately contrast with the horizontal lines that are predominant in the view. The vertical lines of the structures would repeat the irregular vertical lines created by the numerous saguaros in the view. The conductors would be faintly visible along the nearest monopoles, adding very subtle horizontal lines. Panning to the left, the transmission line would disappear behind the nearby low hills. In the simulation photo, the structures are backlit, resulting in them appearing dark and harmonizing with the darker colors in the landscape. Under different lighting conditions the color of the structures may appear light gray or white and contrast with the surrounding landscape. Overall contrast of the transmission line with the surrounding landscape would be moderate.

KOP 17d - KOP 17d is located on BLM-managed public lands on the north side of SR 74, looking west-southwest toward the south side of SR 74 where the transmission line would be developed on lands other than those managed by the BLM under Alternative 2. Sensitive viewers would be westbound travelers on SR 74 traveling at highway speeds. Viewers would have seen portions of the transmission line following the south side of SR 74 through the undulating topography for a few minutes and would be looking at the transmission line 0.25-mile away or less.

The simulated view from KOP 17d (**Figure 4.14-23b**) looks at the transmission line south of SR 74 as viewed by westbound travelers. The addition of the transmission line in the view would add a series of vertical lines that contrast strongly with the undulating horizontal line and skyline. The monopoles in the foreground would appear taller than other landscape elements. The vertical lines of the structures would somewhat repeat the vertical lines created by the saguaros; however, the structures would be much larger, regular shaped, smooth, and

differ in color. The curvilinear horizontal lines created by the conductors would repeat the undulating horizontal lines in the landscape, and fade in the distance. The gray color of the structures would somewhat blend with the background of sky as viewed from this KOP; however, the color of the structures would appear darker or lighter under different lighting conditions. Overall contrast of the transmission line with the surrounding landscape would be strong and would dominate in the foreground.

KOP 18d - KOP 18d is located on BLM-managed public lands on the north side of SR 74, looking east toward the south side of SR 74 where the transmission line would be developed on lands other than those managed by the BLM under Alternative 2. Sensitive viewers would be westbound travelers on SR 74 traveling at highway speeds. Viewers would have seen portions of the transmission line following the south side of SR 74 through the undulating topography for a few minutes, and would be looking at the transmission line 0.25-mile away or less.

The simulated view from KOP 18d (**Figure 4.14-24b**) looks at the transmission line south of SR 74 as viewed by eastbound travelers. The addition of the transmission line in the view would add a series of vertical lines that contrast strongly with the undulating horizontal line and skyline. The vertical lines of the structures would somewhat repeat the vertical lines created by the saguaros; however, the structures would be much larger, regular shaped, smooth, and differ in color. The curvilinear horizontal lines created by the conductors would somewhat repeat the curvilinear lines created by SR 74 and associated shoulder, and fade in the distance. The gray color of the structures would somewhat blend with the background of the sky as viewed from this KOP, however, the color of the structures would appear darker or lighter under different lighting conditions. Overall contrast of the transmission line with the surrounding landscape would be strong.

Overall impact to Portion of Route on All Other Lands - Within the portion of the route that is on all lands other than those managed by the BLM, the contrast would range from none to strong. Overall impacts to this portion of the route would be moderate and long-term.

Overall Impact to Portion of SR 74 within the Linear KOP

As demonstrated by **Figure 4.14-21**, some portion of the Project would be visible from almost any point along SR 74. However as the figure indicates, the number of structures visible for the majority of the segment of SR 74 would be relatively low. Unlike the Proposed Action, in many cases a portion of the structures would not be obscured by topography under Alternative 2; viewers from SR 74 would be seeing more of each structure. Because the proposed ROW would be routed closer to SR 74 than under the Proposed Action, the structures would be closer to the viewers, and in some cases, the views along SR 74 would be dominated by the transmission line. Approximately 54 percent of SR 74 would be within 800 feet of the transmission line, suggesting that the views would be dominated in those areas. The overall impact to the visual resources along the portion of SR 74 within the linear KOP under Alternative 2 would be major and long-term.

Impacts to the Visual Resources of Lake Pleasant Regional Park

Comparing **Figures 4.14-6** and **4.14-21**, impacts to the visual resources of Lake Pleasant Regional Park under Alternative 2 would be similar to those under the Proposed Action, except fewer structures would be visible in certain areas under Alternative 2. Contrast would

be weak and overall impacts to the visual resources of Lake Pleasant Regional Park under Alternative 2 would be negligible to minor and long-term.

Compliance with City of Peoria General Plan

Within the City of Peoria boundaries on BLM-managed public lands, the Alternative 2 route would utilize the SR 74 transportation corridor and would comply with the City of Peoria General Plan.

Operations, Maintenance, and Decommissioning

Impacts from operations, maintenance and decommissioning under Alternative 2 would be the same as those described in **Section 4.14.2.1**.

4.14.2.5 Alternative 3: Carefree Highway Route

Figure 4.14-25 is a viewshed analysis for the Alternative 3 route in relation to its identified viewpoints. The viewshed analysis shows the extent to which the Alternative 3 route would be visible in the landscape and the relative number of structures that would be visible in different areas.

Construction

Compliance with Visual Resource Management Class Objectives and Impacts to the Visual Resource Inventory

The portion of the Project unique to Alternative 3 would not cross BLM-managed public lands, therefore determination of compliance with VRM class objectives and analysis of impacts to VRI is not applicable.

Portion of the Route on All Other Lands

KOP 12 - No simulation was prepared for KOP 12 viewing the Alternative 3 route. As viewed from KOP 12, the Alternative 3 route would be approximately two miles south of the KOP, and would not be visible in the view from KOP 12 due to topography.

Portion of Route Unique to Alternative 3

KOP 9 - The simulated view from KOP 9 (**Figure 4.14-26b**) looks from SR 74 at the transmission line as it follows the Joy Ranch Road alignment approaching the south side of SR 74 and turning south to follow the 179th Avenue alignment. Sensitive viewers would be eastbound travelers on SR 74 traveling at highway speeds, looking at the transmission line less than 0.25-mile away, and going south into the distance.

The undulating topography blocks most of the view of the Project infrastructure to the south, such that only the tops of the structures would be visible in the distance, and the conductor would be only faintly visible. The presence of the vertical lines created by the saguaros would make the tops of the monopole virtually indistinguishable in the view. Because the lines and color of the monopoles would blend well with the lines and colors of the landscape, there would be little or no contrast; the view continues to look very natural and the scenery undiminished by the addition of the transmission line from this location.

KOP 14 - The simulated view from KOP 14 (**Figure 4.14-27b**) looks at the transmission line crossing private lands within the Saddleback Heights development south of SR 74, looking south. Sensitive viewers would be property owners or guests who have reached the KOP location by OHV or on foot who would be looking at the transmission line approximately 1.5 miles away.

The addition of the transmission line in the view would add a series of regularly spaced vertical lines in the middle ground in front of low hills. As viewed from this KOP, the structures would occasionally be visible against the sky, and the conductors would be faintly visible when skylined. Under the lighting conditions that the photo was taken the structures appear as faint light gray lines against the reddish brown landscape behind, and as dark gray lines when skylined.

The color of the structures would vary with lighting conditions, and would be more visible and create greater contrast when side lit and appear brighter in color. Because the skylining would be minimal, the vertical structures would only weakly contrast with the irregular horizontal skyline and would appear similar to and repeat the vertical lines created by the saguaros. The faint horizontal lines of the conductors would somewhat repeat the subtle horizontal lines in the landscape. The complexity and relative scenic quality of the landscape would absorb the transmission line such that while noticeable, overall contrast would be weak.

KOP 15 - The simulated view from KOP 15 (**Figure 4.14-28b**) looks at the transmission line crossing private lands within the existing Vistancia development south of the CAP, looking north. Sensitive viewers would be Vistancia residents looking at the transmission line approximately 1.5 miles away.

The addition of the transmission line in the view would add a series of regularly spaced fine vertical lines in the middle ground. Because of the distance between the KOP and the transmission line, the structures with rolling hills behind them would be difficult to discern, while structures that would be skylined would weakly contrast with the undulating horizontal line and be more visible. The development underway in the foreground competes for dominance with the simple hilly landscape in the middle ground, distracting from the addition of the transmission line, resulting in overall contrast that is weak.

Overall Impact to Route Portion Unique to Alternative 3 - Within the portion of the route unique to Alternative 3, the contrast would be weak. No BLM-managed public lands would be crossed, therefore VRM Objectives would not be applicable and there would be no impact to the VRI. Overall impacts to this portion of the route would be negligible and long-term.

Linear KOP

While the Alternative 3 route would not cross BLM-managed public lands within the linear KOP, it would be visible from within the linear KOP. Because no BLM-managed public lands would be crossed, VRM Objectives would not be applicable and there would be no impact to the VRI.

KOP 19 - No simulation was prepared for KOP 19 viewing the Alternative 3 route. Sensitive viewers would be travelers on SR 74 slowing to turn at the intersection, or travelers on the

Quintero access road approaching and stopping at the intersection. As viewed from KOP 19, the Alternative 3 route would be approximately two miles south of the KOP.

The transmission line would appear as a series of thin regularly spaced vertical lines that would be intermingled with or protrude above the irregular horizontal line created by the vegetation in the foreground. The structures would appear relatively short due to distance and topography, and would be partially obscured by the vegetation in the foreground. The vertical lines of the structures would repeat the vertical lines created by the numerous saguaros in the foreground. Under certain lighting conditions the structures would appear dark and would moderately contrast where skylined in the portion of view to the east or left, and would be less visible against the backdrop of mountains in the view to the west or right. Under lighting conditions that would make the structures appear lighter, the effect would be reversed. Overall contrast from KOP 19 would be weak.

KOP 20 - No simulation was prepared for KOP 20 viewing the Alternative 3 route. As viewed from KOP 20, the Alternative 3 route would be over two miles south of the KOP, and would not be visible in the view from KOP 12 due to topography.

Overall Impact to Route Portion within the Linear KOP - Within the Linear KOP, the contrast would range from none to weak. No BLM-managed public lands would be crossed, therefore VRM Objectives would not be applicable and there would be no impact to the VRI. Overall impacts to this portion of the route would be minor and long-term.

Overall Impact to Portion of SR 74 within the Linear KOP - As demonstrated by **Figure 4.14-25**, some portion of the Project would be visible from any point along SR 74 in the western portion of the linear KOP, but would only be intermittently visible in the eastern portion. As the figure indicates, the number of structures visible for the majority of the segment of SR 74 would be relatively low, except in the far western portion, where a relatively high number of structures would be visible. The overall impact to the visual resources along the portion of SR 74 within the linear KOP under Alternative 3 would be minor and long-term.

Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ

Under Alternative 3, no portion of the transmission line would cross the SRMA; however, the transmission line would be visible from the SRMA. The visibility of the portion of the transmission line between 179th Avenue and the Morgan Substation would be limited due to topography and distance between the transmission line and the public lands. The portion of the transmission line paralleling 179th Avenue would be visible from the southwest corner of the SRMA and RMZ. Comparing **Figure 4.14-25** with **Figures 4.14-6** and **4.14-21**, a greater number of structures would be visible in the SRMA and RMZ than under the Proposed Action and Alternative 2; however, that portion of the transmission line would be farther away from the viewers in the SRMA and RMZ than under the Proposed Action and Alternative 2, reducing the visual effect. The overall contrast would be none to moderate, and the impact of Alternative 3 to visual resources in the SRMA and RMZ would be negligible to minor and long-term.

Impacts to the Visual Resources of Lake Pleasant Regional Park

Comparing **Figures 4.14-6**, **4.14-21**, and **4.14-25**, impacts to the visual resources of Lake Pleasant Regional Park under Alternative 3 would be similar to those under the Proposed Action and Alternative 2, except fewer structures would be visible in certain areas under Alternative 3. Overall contrast would be weak, and impacts to the visual resources of Lake Pleasant Regional Park under Alternative 2 would be negligible to minor and long-term.

Compliance with City of Peoria General Plan

Within the City of Peoria boundaries, the Alternative 3 route would not be within the SR 74 transportation corridor or any other corridor, and thus would not comply with the City of Peoria General Plan.

Operations, Maintenance, and Decommissioning

Impacts from operations, maintenance, and decommissioning under Alternative 3 would be the same as those described in **Section 4.14.2.1**.

4.14.2.6 State Trust Land Route Variation Sub-alternative

Sub-alternative

Under the State Trust Land Route Variation, the Sub-alternative route could be combined with the Proposed Action or any of the Action Alternative routes. The impacts analysis below is limited to the four-mile long Sub-alternative route.

Construction

Castle Hot Springs SRMA, Hieroglyphic Mountains RMZ - The Sub-alternative route would not have an appreciable impact to visual resources of these areas due to distance between the transmission line and the areas (for example, over four miles to the west-southwest between the line and KOP 10 at The Boulders Staging Area within the SRMA).

Compliance with Visual Resource Management Class Objectives and Impacts to the Visual Resource Inventory - The lands associated with the Sub-alternative route visible from KOPs 4, 7, 21, and 22 would not cross BLM-managed public lands, therefore determination of compliance with VRM class objectives and analysis of impacts to VRI is not applicable.

KOP 4 - Sensitive viewers from KOP 4 would be residents or users of Thunder Ridge Airpark. No simulation was prepared from KOP 4 for the Sub-alternative route. Under the Sub-alternative, the transmission line would not be visible from KOP 4, and there would be no contrast. However, the transmission line may be visible to residents of the Thunder Ridge Air Park area as a series of evenly spaced thin vertical lines in the distance that may be noticeable, but would not attract attention, as the line would be located approximately three miles to the west. The line would appear similar to, but somewhat larger than it appears as viewed from KOP 11.

KOP 7 - The simulated view from KOP 7 (**Figure 4.14-5c**) looks at the transmission line intersecting 211th Avenue from the east, then turning north to parallel 211th Avenue, looking south. Sensitive viewers traveling south on 211th would have just turned off SR 74 and would be accelerating to 35 to 45 miles per hour.

The line is then faintly visible turning west to parallel Cloud Road in the distance. The addition of the transmission line in the view would add a series of strong regularly spaced vertical and horizontal lines in the middle ground, and shorter subtle vertical lines in the distance. The vertical lines created by the structures would contrast strongly with the horizontal line at the horizon in the middle ground, and the irregular horizontal line created by the mountains in the distance. The vertical lines of the structures would somewhat repeat the vertical lines created by the few saguaros in the landscape. The horizontal lines of the conductors would repeat the strong horizontal line in the middle ground, but contrast moderately with the vertical lines of the communications tower behind the transmission line, and the saguaros. The structures would appear very solid, smooth and regular, and contrast with the soft, feathery texture of the surrounding vegetation. The transmission line combined with the road, the fencing along the road, and the communications tower would give the view a feeling of development. The strong lines of the road and associated shoulder, the transmission line and the horizon would appear to compete for dominance and conflict, resulting in overall moderate to strong contrast.

KOP 21 - The simulated view from KOP 21 (**Figure 4.14-29b**) looks at the transmission line paralleling the north side of the Cloud Road alignment, looking west-northwest. Sensitive viewers would be residents standing still or moving at low rates of speed, looking at the transmission line less than 0.25-mile away. The addition of the transmission line in the view would add a series of regularly spaced tall vertical lines created by the structures and horizontal lines created by the conductors that become indistinct in the distance. The structures would be much taller than anything else in the view, which would moderately contrast with the much shorter and boxy form of the residences. The vertical and horizontal lines of the transmission line would contrast weakly with the diagonal lines of the roof tops in the foreground to middle ground. The structures and conductors would be light gray in color and contrast weakly with the blue sky background. Under different lighting conditions, such as back lighting, the structures and conductors may appear dark and contrast more strongly with the sky. The transmission line would blend with the developed appearance of residences, road, and fences in the foreground and middle ground, resulting in overall weak to moderate contrast.

KOP 22 - The simulated view from KOP 22 (**Figure 4.14-30b**) looks at the transmission line paralleling the west side of 211th Avenue, looking west. Sensitive viewers would be residents standing still or moving at low rates of speed, looking at the transmission line less than 0.25-mile away.

The addition of the transmission line in the view would add very large, smooth, multi-sided structures that create very strong vertical lines in the foreground. The conductors would create several roughly parallel horizontal lines. While there are other vertical and horizontal lines in the landscape, the lines created by the structures and conductors would dominate rather than repeat the other lines. The gray color of the structures would somewhat repeat shades of gray in the surrounding vegetation. The color of the structures would vary with lighting conditions, but because of the close proximity of the structure to the KOP in this simulation, the color change would not lessen the contrast with and dominance in the surrounding landscape. The multi-sided nature of the structure would give it a slight appearance of texture, but overall the structure would appear to be smooth, somewhat

repeating the smooth texture of the fencing in the foreground and contrasting with the other textures in the surrounding vegetation. Overall the transmission line would contrast strongly with almost every aspect of the surrounding landscape resulting in a major impact to visual resources as viewed from this KOP.

Overall Impact to Route Portion for the Sub-alternative - Within the Sub-alternative route, the contrast would range from moderate to strong. No BLM-managed public lands would be crossed, therefore VRM Objectives would not be applicable and there would be no impact to the VRI. Overall impacts to this portion of the route would be moderate and long-term.

Lake Pleasant Regional Park - The Sub-alternative route would not have an appreciable impact to visual resources of the park due to distance between the transmission line and the park.

Compliance with City Plans - The Sub-alternative route would not be within the Town or Buckeye or the City of Peoria boundaries, therefore the general plans would not be applicable.

Operations, Maintenance, and Decommissioning

Impacts from operations, maintenance and decommissioning under the State Trust Land Route Variation Sub-alternative would be the same as those described in **Section 4.14.2.1**.

Primary Segment Common to All Action Alternatives

Construction

The visual impacts of the transmission line along the Primary Segment would be the same as those described under **Section 4.14.2.1** for KOPs 4, 5, 6, and 7.

Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ - The Primary Segment would not have an appreciable impact to visual resources of these areas due to distance between the transmission line and the areas.

Compliance with Visual Resource Management Class Objectives and Impacts to the Visual Resource Inventory - The lands associated with the Primary Segment visible from KOPs 4, 5, 6, and 7 would not be on BLM-managed public lands, therefore determination of compliance with VRM class objectives and analysis of impacts to VRI is not applicable.

Compliance with City Plans - The Primary Segment Common to All Action Alternatives would not be within the Town of Buckeye or the City of Peoria boundaries, therefore the general plans would not be applicable.

Lake Pleasant Regional Park - The Primary Segment would not have an appreciable impact to visual resources of the park due to distance between the transmission line and the park.

Overall Impact to Route Portion - Within the Primary Segment, the contrast would range from weak to moderate. No BLM-managed public lands would be crossed, therefore VRM Objectives would not be applicable and there would be no impact to the VRI. Overall impacts to this portion of the route would be minor.

Operations, Maintenance, and Decommissioning

Impacts from operations, maintenance, and decommissioning under the Primary Segment common to all Action Alternatives would be the same as those described in **Section 4.14.2.1**.

4.14.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor and change the VRM class; and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on visual resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to visual resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

4.14.3 Comparison of Alternatives

Table 4.14-3 compares the impacts of the Proposed Action and Action Alternatives.

4.14.4 Mitigation and Residual Effects

4.14.4.1 Micrositing

Within the linear KOP, the transmission line would be designed to minimize visual impacts from SR 74. Monopole structures would be used as they are less visually disturbing in foreground/middle ground situations (see **Section 4.14.4.2**). APS worked with the BLM to microsite a sampling of individual structures to understand how visual impacts from the portion of the Project located on BLM-managed public lands would be minimized. Structures were first proposed to be located within the ACC-certificated route as far north as possible from SR 74. Individual structures would be microsited, reducing visual contrast by taking greater advantage of the terrain – to provide either screening or backdropping of the transmission line structures. Minor shifts would be made in the route alignment and potential structure locations within the proposed ROW. Along the approximately 6-mile segment north of SR 74 and within the proposed ROW, the alignment would be shifted from 2 to 195 feet (when comparing centerline to centerline). The structures would be shifted away from ridgelines and points of higher elevation to minimize the amount of the structures that would be visible from SR 74. In certain locations, the lower elevation would reduce sky-lining and provide additional back-dropping or screening opportunities depending on the angle of view. At locations where the transmission line would cross SR 74, individual structures on either side of the highway would be shifted to maximize the distance between the structures and the highway. Simulations comparing previous structure locations with microsited locations would be used to determine effectiveness of micrositing efforts and make adjustments where possible. As a result, micrositing would reduce impacts to views of travelers on SR 74 and may reduce major impacts to some specific viewpoints within the linear KOP to less than

major levels; however, it would not change the overall impact analysis or reduce the estimated area of visual dominance on BLM-managed public lands.

4.14.4.2 Structure Type

Simulations of the proposed transmission line were prepared replacing monopoles with lattice structures as viewed from selected KOPs from SR 74 within the linear KOP where the transmission line would be located on BLM-managed public lands north of SR 74. Because of the relative proximity of the transmission line to SR 74, particularly where the transmission line would cross SR 74, it was determined that the lattice structures were more visually disruptive than the monopole structures. Therefore, to minimize visual impacts along the linear KOP, the BLM would require the use of monopoles on BLM-managed public lands.

The southern portion of the SRMA and RMZ are most greatly impacted by the number of structures visible to the west of the linear KOP, where the landscape flattens out, distant views are common; and the landscape becomes less scenic and complex, and therefore has less capacity to absorb the transmission line (**Figures 4.14-6**, **4.14-21**, and **4.14-25**). In general, the remainder of the route beginning where the route diverges from SR 74 could be constructed using lattice structures south of the highway on private and State Trust lands. Because the viewers in the southern portion of the SRMA and RMZ would be superior to the transmission line, the transmission line would be against a backdrop of lands rather than skylined, and the views would be distant, the use of lattice structures would minimize visual impacts within the SRMA and RMZ, as well as any other distant views from the south, because the viewer would be looking through the lattice structure. However, monopoles would be used when the transmission line would be in the foreground/middle ground of sensitive viewers, such as existing residences and communities. Where the transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency.

Where the transmission line would cross lands other than BLM-managed public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the appropriate land-managing agency and APS.

Table 4.14-3 Comparison of Visual Resource Impacts by Alternative

		PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	SUB-ALTERNATIVE ROUTE	PRIMARY SEGMENT
Portion of the route common to all Action Alternatives on BLM-managed Public Land	Contrast	Weak to moderate	Same as Proposed Action				
	Meets VRM Class Objectives?	Yes, where applicable	Same as Proposed Action				
	Overall Long-term Impact	Minor	Same as Proposed Action				
Portion of the route common to all Action Alternatives on All Other Lands	Contrast	Weak to Moderate	Same as Proposed Action				
	Overall Long-term Impact	Minor	Same as Proposed Action				

Table 4.14-3 Comparison of Visual Resource Impacts by Alternative (Continued)

		PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	SUB-ALTERNATIVE ROUTE	PRIMARY SEGMENT
Portion of Route on BLM-managed Public Lands - Linear KOP	Contrast	None to strong and dominating	Same as Proposed Action	Moderate to strong and dominating	None to moderate	N/A	N/A
	Meets Current VRM Class Objectives?	Yes, in approx. 50% of VRM Class III north of SR 74 and 74% of VRM Class III south of SR 74 No, in approx. 50% of VRM Class III north of SR 74 and 26% of VRM Class III south of SR 74	Same as Proposed Action	Yes, in approximately 64% of VRM Class III south of SR 74 No, in approximately 36% of VRM Class III south of SR 74	N/A	N/A	N/A
	Would Meet VRM Objectives with the Proposed RMPA?	Yes	Same as Proposed Action	Yes	N/A	N/A	N/A
	Overall Long-term Impact	Major	Same as Proposed Action	Major	Minor	N/A	N/A

Table 4.14-3 Comparison of Visual Resource Impacts by Alternative (Continued)

		PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	SUB-ALTERNATIVE ROUTE	PRIMARY SEGMENT
Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ	Contrast	Minimal to strong and dominating	Same as Proposed Action	Negligible to moderate	None to moderate	N/A	N/A
	Meets VRM Class Objectives?	Yes, in approx. 50 % of VRM Class III north of SR 74 and 74% of VRM Class III south of SR 74 No, in approximately 50% of VRM Class III north of SR 74 and 26% of VRM Class III south of SR 74	Same as Proposed Action	Yes, in approximately 64 % of VRM Class III south of SR 74 No, in approximately 36% of VRM Class III south of SR 74	Yes, no portion of the transmission line would cross or dominate the views within the SRMA.	N/A	N/A
	Would Meet VRM Objectives with the Proposed RMPA?	Yes	Same as Proposed Action	Yes	N/A	N/A	N/A
	Overall Long-term Impact	Minor to moderate	Same as Proposed Action	Negligible to moderate	Minor	N/A	N/A

Table 4.14-3 Comparison of Visual Resource Impacts by Alternative (Continued)

		PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	SUB-ALTERNATIVE ROUTE	PRIMARY SEGMENT
Visual Resources Inventory		In the area where the transmission line would dominate the view, it would be a very discordant element; however, it would not affect the Scenic Quality rating assigned to the SQRU.	Same as Proposed Action	In the area where the transmission line would dominate the view, it would be a very discordant element. The amount of acreage where the transmission line would dominate the view would be less than under the Proposed Action and would not affect the Scenic Quality rating assigned to the SQRU.	N/A	N/A	N/A
Portion of Route on All Other Lands	Contrast	Weak to Moderate	Same as Proposed Action	None to Strong	See Portions of Route Unique to Alternative 3 below	Weak to Strong	Weak to Moderate
	Overall Long-term Impact	Minor	Same as Proposed Action	Moderate		Moderate	Minor
Portion of Route Unique to Alternative 3	Contrast	N/A	Same as Proposed Action	N/A	Weak	N/A	N/A
	Overall Long-term Impact	N/A	Same as Proposed Action	N/A	Negligible	N/A	N/A

Table 4.14-3 Comparison of Visual Resource Impacts by Alternative (Continued)

		PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	SUB-ALTERNATIVE ROUTE	PRIMARY SEGMENT
Lake Pleasant Regional Park	Contrast	Weak to moderate	Same as Proposed Action	Weak	Weak	N/A	N/A
	Overall Long-term Impact	Negligible to minor	Same as Proposed Action	Negligible to minor	Negligible to minor	N/A	N/A
Impact to Portion of SR 74 within the Linear KOP		Moderate	Same as Proposed Action	Major	Minor to Moderate	N/A	N/A
Complies with Town of Buckeye and City of Peoria General Plans?		Yes	Yes	No – City of Peoria	No – City of Peoria	N/A	N/A

4.14.4.3 Color

The color of the structures or lattice towers affects how well the structure blends in the environment. Photographs of boards treated with the BLM's standard environmental colors were taken from KOPs representing typical topography and vegetation within the Project Area. The photographs were then analyzed to identify which standard environmental color would minimize visual impacts. While no one color works best in all situations and lighting conditions, the shadow gray and shale green colors blended best under front lit conditions and had low levels of contrast in back lit situations. A complete analysis of the color selection process is available in the Project Record. Surface treatment options for monopole structures are very limited and do not achieve much color variation. The colors available would be shades of gray ranging to almost black; no surface treatments available would resemble shale green. Among the surface treatments available for the monopole structures, the BLM would require a treatment that would be non-reflective and most closely resemble shadow gray.

Following the implementation of the mitigation measures, although impacts to visual resources would be reduced in some cases, residual effects would still occur with the transmission line still being present in the area where there was not one previously.

4.14.5 Unavoidable Adverse Impacts

As described under **Section 4.14.4**, micrositing of structures may be used to reduce the visibility of the transmission line from certain points by taking advantage of topography. Treating the structures with shadow gray or shale green, or a surface treatment that would achieve a similar color may help the structures to blend with the colors in the surrounding landscape and reduce the overall visibility of the structures at a distance. These treatments would help to reduce contrast and make the transmission line less conspicuous in the landscape from certain viewpoints. However, most of the impacts with the highest intensity levels described under **Section 4.14.1** would be unavoidable. For the Proposed Action, Alternative 1, and Alternative 2, the VRM Class would be changed as a result of the RMPA. In addition, application of micrositing and the color of the structures would not alleviate these major impacts.

4.15 WATER RESOURCES

4.15.1 Indicators and Methods

4.15.1.1 Indicators

The following surface water indicators are used to evaluate identified issues and the potential impacts to surface water resources from the Project:

- Changes in volume, timing, and/or extent of surface water flow
- Number of drainages and floodplains crossed by the transmission line and access roads

- Acres of waters of the U.S. potentially impacted
- Proximity of Project components that drain directly to the Agua Fria River

There were no groundwater resources issues raised during scoping. Groundwater indicators are:

- Measurable effect on groundwater levels as a result of construction water uses
- Potential for hydrocarbon spills or releases to occur over shallow groundwater

4.15.1.2 Methods

A PJD of waters of the U.S. associated with the Proposed Action and the other Action Alternatives was prepared by URS (URS 2013a), followed by application of two impact assessment models for the same (URS 2013b; URS 2013c). The Study Area for the assessments included the proposed 200-foot wide ROW routes associated with the Proposed Action and Action Alternatives, as well as a corridor for the corresponding new (but temporary) access roads. The PJD determined the presence of waters of the U.S. within the limits of the proposed transmission line disturbance corridors associated with each Action Alternative. The impact assessment models used the PJD as well as Project configuration (e.g., span lengths) to evaluate potential maximum impact acreages, without defining which specific waters of the U.S. features would be subject to these disturbances. However, when the final Project design and configuration is identified, it is expected that the actual disturbance of jurisdictional waters would be less because APS would avoid to the extent possible jurisdictional waters when siting poles, access roads, construction pad areas, and tensioning/pulling sites (URS 2013b).

An earlier desktop review (URS 2012l) used aerial photography to count the total number of drainages visible within those same corridors. While all of these drainages may represent channelized flow paths that at least occasionally convey runoff, not all of them are jurisdictional waters of the U.S. Thus, the PJD-determined waters of the U.S. are a subset of the total number of drainages. Section 404 permits would need to be obtained before filling any jurisdictional waters of the U.S. Other washes that are not jurisdictional are also relevant to the impact analysis, separate from Section 404, so their counts are also provided below.

4.15.2 Direct and Indirect Effects by Alternative

4.15.2.1 Impacts Common to All Action Alternatives

Surface Water Resources

Construction

If the estimated short-term, average 48,000 gallons per day (33 gpm) of construction water is sourced from surface water, it would be leased or purchased from an existing municipal or agricultural user. This water would not likely come from one of the Study Area washes, because they only flow ephemerally and are not reliable water sources. If construction water is sourced from either of the two major Study Area streams (the Agua Fria and Hassayampa Rivers), it would likely be obtained from reservoirs upstream of the Study Area or from one

of the distribution canals such as the CAP. Impacts to volume, timing, and/or extent of surface water flow resulting from this water usage would be negligible because the quantity would be small, the period of use would be temporary, and it would represent an alteration of an existing use rather than a new use.

Construction activities almost always have the potential to locally increase runoff due to vegetation removal, soil compaction, and drainage path modification. However, construction associated with the Project (during either the first phase or the additional 230kV line addition at a later date) would be unlikely to do so to any more than a negligible degree because the construction corridor (and presumably any new or upgraded roads) would be limited in acreage in comparison to overall watershed size and dispersed among a number of tributary drainages. Therefore, construction activities would not be likely to alter the volume, timing, and/or extent of surface water flow to any measurable degree. Furthermore, the Study Area's ephemeral washes are naturally subject to very wide fluctuations in discharge that occur on an erratic basis and their channel characteristics have been formed accordingly. If minor changes in runoff characteristics did occur, they would not be likely to have a noticeable effect on channel morphology or these channels' abilities to provide for flood control, energy dissipation, and sediment movement.

Similarly, via the same mechanisms as listed above, construction activities generally have the potential to increase turbidity, suspended sediment concentrations, and/or dissolved mineral concentrations, either due to erosion of upland soils or in-stream bed and bank erosion. However, the Study Area surface waters are likely naturally high in turbidity because of suspended particulates and likely to contain naturally occurring constituents that are leached from the soils, including minerals and salts. Any increases that may be due to construction activities would likely be negligible or minor due to the limited and dispersed disturbance acreage and the implementation of erosion and runoff control BMPs. However, the proximity of construction activity disturbances to drainages is one measure by which alternatives can be compared; this is discussed below for the individual alternatives.

Concrete truck wash-out could also be a potential source of surface water quality impacts, either due to concrete materials themselves entering the washes or due to wash waters being discharged with sufficient velocity to erode soils and transport them to the washes. However, the primary wash out areas for concrete trucks would be in designated locations in the lay down yards, which would be constructed on private lands. Additional wash out for purposes of cleaning chutes may take place at other designated locations along the ROW, but this occurrence would be minimal. Regardless, all wash out areas would be required to comply with the AZPDES General Permit for Stormwater Discharges Associated with Construction Activity to Waters of the U.S., which stipulates no discharge of these types of wash waters. Assuming that this and all other requirements of the General Permit are complied with, impacts from this activity would result in negligible impacts to surface water.

Although construction-related disturbances would occur throughout the ROW, and thus would be done within or proximate to ephemeral drainages, APS does not plan to place transmission line structures, anchors, or other permanent structures within the drainage channels. Instead, all washes would be spanned. This would help to minimize water quality degradation (such as increases in turbidity, suspended sediments, or minerals). It would also help to minimize impacts to riparian vegetation, if any, associated with the drainage channel,

which in turn would also help to maintain water quality. Even the widest channel (the Agua Fria River crossing) under all Action Alternatives would be well within the allowable span length. However, given the width of floodplains, some structures may inevitably need to be located within the floodplain. This is discussed further by individual alternative, below.

Project-related road construction activities and use likely represent a greater potential source for water quality impacts than activities related to construction of the transmission line itself. In addition to the potential for turbidity, sediment, and salt increases (which, if they occurred, should be localized, short-term, and minor, assuming proper BMP use), there would be the potential for inadvertent hydrocarbon releases or other contaminants (e.g., concrete mix) due to accidents or spills. However, this potential would also be reduced by proper work practices, clean-up protocols, and other BMPs. Further, the resultant impact to surface water quality would be reduced because of the lack of live water in the Study Area. The potential for these impacts can be somewhat related to the acreage of roadway and the number of drainage crossings (whether or not they are jurisdictional waters of the U.S.). These are compared by alternative in the following subsections. Note that existing roads that would be used in association with the Project are not included in either acreage estimates or potential number of waters of the U.S. or other non-jurisdictional crossings. These existing roads would not result in construction activities, waters of the U.S. fills, or sediment production. They would, however, be a potential location for an inadvertent spill or release during transport.

The above discussions on surface water impacts would apply to both phases of construction (i.e., the 500kV line and the 230kV line). However, presumably, stringing the 230kV line would not require as much earthwork, thus there would be even lower water usage than the first construction phase. It would also presumably not require concrete. Further, it would not likely require as much heavy equipment use, further reducing the potential for inadvertent hydrocarbon releases as compared to the first phase.

Last, the potential for impacts to public drinking water supplies if transmission lines or other components fall into the river (presumably the Agua Fria) or CAP canal during construction of either of the lines would be negligible. First, proper installation practices make it highly unlikely that this would occur. Second, conveyances of public drinking water (prior to treatment) would only have the potential to intersect the transmission line where it crosses the Agua Fria River (seasonally) or the CAP canal. The CAP crossing for all Action Alternatives is across a section of the canal that is buried, and if the line fell in this location, it would very likely hit the ground, not the water. In the very unlikely event that the line falls in the water, there would likely be a temporary shutdown of the conveyance while the line was removed; this would not likely impact municipal water supply, because public drinking water systems are required to have a storage reserve for a specified time period.

Operations, Maintenance, and Decommissioning

There would be no water usage during Project operations or maintenance, thus there would be no reduction of surface water quantity during those activities. During decommissioning, presumably water usage would be required at a similar quantity as during construction. If sourced from surface water, impacts to its quantity or level would be negligible, for the same reasons as it would be during construction.

The construction-related soil and vegetation disturbances would remain during operations and maintenance, due to road travel and the time for rehabilitation of non-used areas. This would have some potential to increase turbidity, sediment, and mineral concentrations; however, these increases would likely be negligible or minor due to the limited and dispersed disturbance acreage and the implementation of erosion and runoff control BMPs. These BMPs are outlined in **Appendix 2A**; they include measures to avoid or minimize direct and indirect impacts to ephemeral streams. With time, reclamation success would further reduce this potential. **Appendix 2B** includes a discussion of how reclamation vegetation would be managed to control dust. Note that APS anticipates that future maintenance would be very minimal, based upon past history.

The potential for impacts to public drinking water supplies if transmission lines or other components fall into the river (presumably the Agua Fria) or CAP canal during operations, maintenance, or decommissioning would be negligible. First, there would be no tall trees whose limbs could cause a downed lined. Second, proper decommissioning and decommissioning practices make it highly unlikely that a line would fall into either of these water features.

Although APS does not plan to install transmission line structures, anchors, or other permanent structures within the drainage channels, during operations, structures that start out near, but outside of a drainage channel, may end up within one because many of the Study Area washes are unstable and can migrate laterally during significant runoff events. If this occurred, there could be a short-term acceleration of in-stream erosion and downstream sedimentation. However, this occurrence would likely be a high priority maintenance issue for APS.

As described above under construction, there may be several instances where permanent structures must be placed within the existing floodplain. Although it is unlikely given their small footprint, these structures could possibly impede flood flows or redirect flood flows to areas not currently within a flood hazard area by raising the base flood elevation. However, APS would obtain proper permits for such locations and conduct any necessary assessments including scour analysis and/or potential for flow displacement. Based upon those results, APS would determine the appropriate protection measures as committed to in **Section 2.4.1.1** to ensure that water quality and channel stability are maintained.

Groundwater Resources

Construction

If the estimated short-term, average 48,000 gallons per day (33 gpm) of construction water is sourced from groundwater, it would be leased or purchased from an existing well owner. The well would likely be completed in the alluvial aquifer of the Phoenix AMA. Due to the small amount of water required, the well owner would not need a grandfathered right or withdrawal permit to pump from the AMA. Further, Project use would not represent a new groundwater withdrawal, and would therefore have a negligible impact on groundwater quantity or levels in the alluvial aquifer.

As with any construction project, there would be some potential for inadvertent releases of hydrocarbons or other contaminants due to accidents or spills. However, this potential would be reduced by proper work practices, clean-up protocols, etc. Further, the resultant impact to

groundwater quality would be negligible because there are no known areas of shallow groundwater within the Study Area. Similarly, there would be negligible impacts to groundwater quality from concrete truck wash-out practices.

The above discussion would apply to both phases of construction (i.e., the 500kV line and the 230kV line). However, presumably, stringing the 230kV line would not require as much earthwork, thus there would be even lower water usage than the first construction phase. It would also presumably not require concrete. Further, it would not likely require as much heavy equipment use, further reducing the potential for inadvertent hydrocarbon releases as compared to the first phase.

Operations, Maintenance, and Decommissioning

There would be no water usage during Project operations or maintenance, thus there would be no impact to groundwater quantity or levels during those activities. During decommissioning, presumably water usage could be required at a similar quantity as during construction, although likely less would be needed. If sourced from groundwater, impacts to its quantity or level would be negligible. The potential to impact groundwater quality would also be negligible, for the same reasons as it would during construction.

4.15.2.2 Proposed Action

Surface Water Resources

Construction

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed (both jurisdictional and non-jurisdictional), the information on their numbers can be used as a stand-in for proximity. According to URS (2012k), the Proposed Action route would cross 552 drainages. Fewer than half (191) of these drainages have been determined to be jurisdictional (URS 2013c); temporary disturbance of these waters of the U.S. is predicted to be no more than 3.70 acres (URS 2013b). Similarly, URS (2012k) estimated that the Proposed Action access road construction (not including the center line road, which is included in the above disturbance calculation) would cross 55 drainages. The predicted maximum acreage associated with the subset of these road crossings that are jurisdictional is 0.81 acres (URS 2013c). The combined total direct disturbance impact for the Proposed Action would be 4.51 acres of jurisdictional waters; 1.22 acres of this total would represent maximum potential permanent disturbances.

The Proposed Action route would cross three segments of a 100-year flood zone associated with water overflowing from the Granite Reef Aqueduct near the west end of the route. These segments would be approximately 1,190, 1,000, and 610 feet long, so there may need to be one or two structures placed within this flood zone. Continuing east, the line would cross 100-year floodplain segments of approximately 370 and 1,800 feet associated with Iona Wash; the latter segment is an off-stream flood zone that would likely need to have one or two structures placed within it. Trilby Wash has 100-year floodplain that is approximately 670 feet wide at the route crossing, so no structure placement would likely be necessary. One-hundred-year floodplains associated with three tributaries to Padelford Wash would be

crossed by the route, in a total of five segments. The longest of these segments would be approximately 300 feet, which would easily be spanned by the line (the total for all five is approximately 700 feet). Continuing east, the line would cross three relatively narrow (45, 55, and 80 feet) 100-year floodplains associated with three unnamed drainages that are tributary to the Agua Fria River; structure placement within these floodplains could easily be avoided. Last, the Agua Fria River's 100-year floodplain is approximately 840 feet at the Proposed Action route crossing, and may or may not require a structure to be placed within it. In sum, the line would cross approximately 7,360 feet of 100-year floodplains associated with several different drainages. Between two and five structures may need to be placed within a floodplain under the Proposed Action.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

Groundwater Resources

Construction

See discussion under **Section 4.15.2.1**.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

4.15.2.3 Alternative 1: Proposed Action with Additional Corridor

Surface Water Resources

Construction

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed, the information on the number of washes can be used as a stand-in for proximity. Identical to the Proposed Action, the Alternative 1 route would cross 552 drainages (191 of which are jurisdictional); associated new access roads would cross 55 drainages. This could result in a total estimated disturbance of approximately 4.51 jurisdictional acres temporarily disturbed, with 1.22 acres of those potentially permanently impacted. It is not known how many more drainages would be outside the actual ROW, but within the rest of the proposed multiuse utility corridor under this alternative.

Regarding potential impacts to floodplains, Alternative 1 would have identical impacts during construction activities. In addition, under this alternative, there would be a change in management of lands administered by BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor could potentially impact additional surface water resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to surface water resources.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

Groundwater Resources

Construction

See discussion under **Section 4.15.2.1**. In addition, under this alternative, there would be a change in management of lands administered by BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor could potentially impact ground water resources located on these lands, depending upon the Project. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to ground water resources.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

4.15.2.4 Alternative 2: ROW South of SR 74

Surface Water Resources

Construction

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed (both jurisdictional and non-jurisdictional), the information on their numbers can be used as a stand-in for proximity. According to URS (2012k), the Alternative 2 route would cross 566 drainages. Fewer than half (189) of these drainages have been determined to be jurisdictional (URS 2013c); temporary disturbance of these waters of the U.S. is predicted to be no more than 4.01 acres (URS 2013b). Associated new roads outside the corridor would cross 49 drainages (URS 2012k). The predicted maximum acreage associated with the subset of these road crossings that are jurisdictional is 1.9 acres (URS 2013c). The combined acreage of potentially disturbed jurisdictional waters is 5.91 acres; only 0.42 acres of this total would represent maximum potential permanent disturbances of these waters. This is essentially the same as the Proposed Action in regard to impact potential.

The Alternative 2 route would cross three segments of a 100-year flood zone associated with water overflowing from the Granite Reef Aqueduct near the west end of the route. These segments would be approximately 1,190, 1,000, and 610 feet long, so there may need to be one or two structures placed within this flood zone. Continuing east, the line would cross 100-year floodplain segments of approximately 370 and 1,800 feet associated with Iona Wash; the latter segment is an off-stream flood zone that would likely need to have one or two structures placed within it. Trilby Wash has 100-year floodplain that is approximately 670 feet wide at the route crossing, so no structure placement would likely be necessary. Three segments of one-hundred-year floodplains associated with three tributaries to Padelford Wash would be crossed by the route. The longest of these segments would be approximately 210 feet, which would easily be spanned by the line (the total for all three is approximately 475 feet). Continuing east, the Alternative 2 line would cross six 100-year floodplains segments (totaling approximately 660 feet) associated with three unnamed drainages that are tributary to the Agua Fria River; structure placement within these floodplains could easily be avoided, as the longest of these segments is approximately 250

feet. Last, the Agua Fria River's 100-year floodplain is approximately 840 feet at the Alternative 2 route crossing, and may or may not require a structure to be placed within it. Overall, this alternative would cross approximately 7,615 feet of 100-year floodplain associated with several different drainages. This is slightly more (255 feet) than under the Proposed Action and Alternative 1. Between two and five structures may need to be placed within a floodplain under Alternative 2, which is the same as could be required under the Proposed Action and Alternative 1.

In addition, under this alternative, there would be a change in management of lands administered by BLM, by establishing a multiuse utility corridor on lands south of SR 74. Co-location of future utilities within the proposed additional corridor could impact additional surface water resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to surface water resources.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

Groundwater Resources

Construction

See discussion under **Section 4.15.2.1**. In addition, under this alternative, there would be a change in management of lands administered by BLM, by establishing a multiuse utility corridor on lands south of SR 74. Co-location of future utilities within the proposed additional corridor could impact ground water resources located on these lands depending upon the Project. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to ground water resources.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

4.15.2.5 Alternative 3: Carefree Highway Route

Surface Water Resources

Construction

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed (both jurisdictional and non-jurisdictional), the information on the number of washes can be used as a stand-in for proximity. According to URS (2012k), the Alternative 3 route would cross 544 drainages; fewer than half (188) of these drainages have been determined to be jurisdictional (URS 2013c). Temporary disturbance of these waters of the U.S. is predicted to be no more than 4.54 acres (URS 2013b). Associated new roads outside the corridor would cross 50 drainages (URS 2012k). The predicted maximum acreage associated with the subset of these crossings that are jurisdictional is 1.32 acres (URS 2013c). The combined total for Alternative 3 would be 5.86 acres of jurisdictional waters potentially impacted during construction, only 0.58 acres of

which would represent maximum potential permanent disturbances of these waters. This is essentially the same impact potential as the Proposed Action, Alternative 1, or Alternative 2.

The Alternative 3 route would cross three segments of a 100-year flood zone associated with water overflowing from the Granite Reef Aqueduct near the west end of the route. These segments would be approximately 1,190, 1,000, and 610 feet long, so there may need to be one or two structures placed within this flood zone. Continuing east, the line would cross 100-year floodplain segments of approximately 370 and 1,800 feet associated with Iona Wash; the latter segment is an off-stream flood zone that would likely need to have one or two structures placed within it. Trilby Wash has 100-year floodplain that is approximately 670 feet wide at the route crossing, so no structure would likely be necessary. A 1,150-foot segment of one-hundred-year floodplains associated with Padelford Wash would be crossed by this route, and may require a structure to be placed within it. Continuing east, the Alternative 3 route would cross five 100-year floodplains segments (totaling approximately 1025 feet) associated with three unnamed drainages that are tributary to the Agua Fria River; structure placement within these floodplains could easily be avoided, as the longest of these segments is approximately 410 feet. Last, the Agua Fria River's 100-year floodplain is approximately 1,335 feet at the Alternative 3 route crossing, and would likely require a structure to be placed within it. Overall, this alternative would cross approximately 9,150 feet of 100-year floodplain associated with several different drainages. This is somewhat more than under the Proposed Action and Alternatives 1 and 2. Between three and six structures may need to be placed within a floodplain under Alternative 3, which is slightly more than could be required under the Proposed Action and Alternatives 1 and 2.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

Groundwater Resources

Construction

See discussion under **Section 4.15.2.1**.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

4.15.2.6 State Trust Land Route Variation Sub-alternative

Sub-alternative

Surface Water Resources

Construction

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed (both jurisdictional and non-jurisdictional), the information on the number of washes can be used as a stand-in for proximity. According to URS (2012k), within this four-mile Sub-alternative route, the line would cross 73 drainages. Approximately one-third (26) of these drainages have been determined to be jurisdictional

(URS 2013c). Temporary disturbance of these waters of the U.S. is predicted to be no more than 0.66 acres, of which 0.55 acres would be permanent (URS 2013c). There would be no associated new access roads.

There would be no 100-year flood zones crossed by the Sub-alternative route.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

Primary Segment Common to All Action Alternatives

Surface Water Resources

Construction

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed (both jurisdictional and non-jurisdictional), the information on the number of potential waters of the U.S. can be used as a stand-in for proximity. According to URS (2012k), within this four-mile Primary Segment route, the line would cross 70 drainages. Less than one-third (22) of these drainages have been determined to be jurisdictional (URS 2013c). Disturbance of these waters of the U.S. during construction is predicted to be no more than 0.39 acres; these would remain as permanent impacts (URS 2013c). There would be no associated new access roads. This is essentially the same impact potential as under for Sub-alternative.

As with the Sub-alternative, there would be no 100-year flood zones crossed by the Primary Segment of the transmission line.

Groundwater Resources

Construction

See discussion under **Section 4.15.2.1**.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

4.15.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on water resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to water resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

4.15.3 Mitigation and Residual Effects

No mitigation, beyond those practices and requirements already included in **Chapter 2**, is required because impacts to water resources are predicted to be negligible, minor, and/or have a very low potential to occur, thus no residual effects are anticipated.

4.15.4 Unavoidable Adverse Impacts

No unavoidable adverse impacts are anticipated.

4.16 WILDLIFE RESOURCES, INCLUDING SPECIAL STATUS WILDLIFE AND MIGRATORY BIRDS

4.16.1 Indicators and Methods

4.16.1.1 Indicators

The following indicators were determined to measure impacts to wildlife resources:

General Wildlife and Migratory Birds

- Direct mortality of less-mobile species, including migratory bird nests
- Suitable habitat (i.e., mapped vegetation community) loss and fragmentation, including riparian corridors
- Increased noise and vibrations that would reduce habitat quality Electrocution risk to migratory birds
- Increased access for predators

Special Status Species

- Suitable habitat disturbance, or proximity to suitable habitat
- Probability of occurrence in the Study Area

4.16.1.2 Impact Levels

The following impact magnitude levels were defined for wildlife resources (**Table 4.16-1**).

Table 4.16-1 Description of Effect Magnitude Criteria with regard to Wildlife Resources

ATTRIBUTE OF EFFECT		DESCRIPTION
Magnitude (Intensity)	Negligible	The changes to individuals or habitat would not be able to be meaningfully measured or evaluated by a trained observer.
	Minor	There would be a small, but detectable effect to habitat amount/quality or to individuals of a species that would be noticeable primarily on the scale of individuals in a localized area. There would be no effect on the viability of the local population or habitat capability.
	Moderate	There would be an effect to habitat amount/quality or to individuals of a species that would be clearly detectable or sufficient to cause effects on a local population scale. Effects may be a reduction in population numbers, density, or habitat capability that may reduce the species' existing distribution in the Project Area.
	Major	There would be an effect to habitat amount/quality or to individuals or a species that would have a substantial, highly noticeable influence on the local population and may affect the regional population. The effect is likely to reduce local population numbers, density, or habitat capability to the point that the species distribution within the Project Area would be substantially reduced if not eliminated, such that the population would not likely return to a sustainable level.
Duration	Temporary	Short-lived (i.e., during construction).
	Short-term	10 years or less.
	Long-term	More than 10 years.

4.16.2 Direct and Indirect Effects by Alternative

4.16.2.1 Impacts Common to All Action Alternatives

Construction

Mortality

All ground-clearing/disturbance activities that could affect special status species or habitat would be monitored. Where warranted, a qualified biologist would be retained to conduct pre-construction activities to minimize or prevent impacts to sensitive species or habitat. In cases where special status species or species of concern are identified, appropriate action would be taken to avoid adverse impacts on the species and its habitat.

Direct impacts to small mammals and reptiles would occur during construction activities when individuals are unable to move away from vehicles and other heavy equipment. Mortality would occur when individuals are buried or run over by equipment; many small

mammals and reptiles utilize small burrows underground, so these impacts are particularly likely if individuals stay underground within the direct disturbance area instead of moving to adjacent habitat. In general, large mammals would not be directly impacted by construction equipment because they would move away from the disturbance area or could be easily seen and avoided.

Pre-construction surveys would be implemented during the nesting season to locate raptor and other migratory bird nests. If a nest is found, a timing or spatial buffer may be implemented following BLM guidelines. Incidental take of migratory birds is not permitted under BLM policy.

Habitat loss

There are at least 40 reptile or amphibian, 40 mammal, and over 50 migratory bird species that are likely to occur in creosote white-bursage desert scrub or palo verde-mixed cacti desert scrub habitats within the Study Area. Construction activities would remove desert scrub communities and convert them to disturbed lands, which would be unsuitable habitat for most wildlife. Special status species that use desert scrub include desert tortoise, Arizona chuckwalla, reticulate Gila monster, golden eagle (foraging only), ferruginous hawk, American peregrine falcon (foraging only), western burrowing owl, prairie falcon (foraging only), California leaf-nosed bat (foraging only), cave myotis (foraging only), greater western mastiff bat (foraging only), LeConte's thrasher, elf owl, Costa's hummingbird, Gila woodpecker and gilded flicker, Lawrence's goldfinch, and sage thrasher. Individuals of these species using habitat within the ROW for breeding, cover, foraging, and movement would be either forced into adjacent suitable habitat, or forced to travel some distance to find suitable habitat. Desert scrub habitats are not unique and are very abundant in the vicinity of the ROW and in the general area. However, adjacent habitat may be less suitable because it may already be occupied or defended, and resources may already be at a carrying capacity to maintain a particular species' population.

The removal of desert scrub habitats for either temporary or permanent uses under any Action Alternative would essentially be a permanent removal of habitat for wildlife and special status species. Sonoran desert vegetation is slow-growing and although annuals would colonize in the short-term following disturbance, a stable, perennial community would not emerge for the long-term (see Vegetation Resources, **Section 4.13.2.1**). Impacts to wildlife and special status species from desert scrub habitat losses would be minor because only wildlife individuals in the area immediately within and adjacent to the ROW would be adversely affected, and there would be no change to species' distributions in the Study Area.

Riparian areas and desert washes are high-value centers of biodiversity and are used by a wide variety of wildlife, including special status amphibians, birds, and mammals. Riparian areas would be avoided and would not be disturbed by construction activities, unless absolutely necessary. Impacts from habitat losses to species that utilize riparian habitats (special status species include lowland leopard frog, snowy egret, bald eagle, southwestern willow flycatcher, belted kingfisher, western red bat, western yellow bat, Bell's vireo, yellow warbler, and red-napped sapsucker), therefore, would be negligible. Desert washes containing seasonal flows or riparian vegetation occur throughout the Study Area, and would be avoided if possible. The loss of desert wash habitat, if it occurred, would be long-term and

moderate to two special status species: crissal thrasher and Lucy's warbler. Habitat capability for these species would be adversely affected by the loss of these areas. Desert washes are mainly present west of the Action Alternative routes (i.e., Hieroglyphic Mountain area), so any disturbance to these areas would be the same under all Action Alternatives.

Impacts to special status species from habitat loss are summarized in **Table 4.16-2**.

Noise and Vibration

Smaller mammals and reptiles would be affected by noise and vibration caused by heavy equipment if individuals cannot escape by fleeing the construction area or by finding refuge underground. Hearing capabilities in these individuals may be damaged for the short- or long-term and may affect predator detection abilities. These impacts would be minor, as only individuals in the immediate vicinity of construction activities would be affected. Larger mammals such as coyotes or badgers would move away from construction noise, would be displaced for the duration, and may return to the area following construction activities. Other species that may be using the area for foraging would be similarly displaced. Displacement impacts would be short-term and minor. Species present in habitats that are not disturbed, but are adjacent to the construction zone, such as within riparian habitats along the Agua Fria River (species listed above), would also be temporarily disturbed by noise. However, these impacts would be short-term and would not affect populations, reproduction, or habitat capability within riparian areas.

Pre-construction surveys would locate any nests within the construction zone and these nests would be avoided (see **Section 4.16.3**). Some nests may be within a larger radius where noise and vibration impacts may still be present, but would not cause adverse reproductive effects. In addition, many migratory birds would be present and not nesting in the area; these individuals would simply avoid the noise. Impacts to migratory birds from noise and vibration would be short-term and minor, as only individuals in the local area would be affected.

Impacts to special status species from habitat losses and noise are summarized in **Table 4.16-2**.

Table 4.16-2 Summary of Impacts to Special Status Species

(Footnotes at end of table.)

SPECIES	POSSIBLE OCCURRENCE	IMPACTS	
		HABITAT LOSS	NOISE
Lowland leopard frog	Agua Fria or Hassayampa Rivers	No loss of aquatic or riparian habitats	Noise Impacts[1]
Sonoran desert tortoise	Sonoran desert scrub (Hieroglyphic Mountains [Mtns])	**Habitat loss**[1] – long-term and minor	Short-term and minor, if present
Arizona chuckwalla	Rocky hills or mountains with crevices or boulders (Hieroglyphic Mtns)	Habitat loss – long-term and minor	Short-term and minor, if present

Table 4.16-2 Summary of Impacts to Special Status Species (Continued)

(Footnotes at end of table.)

SPECIES	POSSIBLE OCCURRENCE	IMPACTS	
		HABITAT LOSS	NOISE
Reticulate Gila monster	Rocky hills or mountains with crevices or boulders (Hieroglyphic Mtns)	Habitat loss – long-term and minor	Short-term and minor, if present
Snowy egret	Agua Fria River	No loss of aquatic or riparian habitats	Noise Impacts[1]
Golden eagle	Any habitat (foraging)	Habitat loss (foraging) – long-term and minor	No nesting substrate within one mile of any ROW (Castle Hot Springs - 10 miles N of SR 74; Vulture Mountains - 5 miles NW of Circle City); Noise impacts to foraging eagles would be negligible.
Bald eagle	Lake Pleasant	No loss of aquatic or riparian habitats	Noise Impacts[1] Negligible impacts would occur to migrating juveniles or wintering eagles, if roosting or foraging within a one mile radius of construction activities.
Ferruginous hawk	Open country	Habitat loss – long-term and minor	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts to foraging individuals would be negligible.
American peregrine falcon	Cliffs (limited) Any habitat (foraging)	Habitat loss (foraging) – long-term and minor	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts to foraging individuals would be negligible.
Western burrowing owl	Open country	Habitat loss – long-term and minor	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts would be minor and short-term.
Southwestern willow flycatcher	Agua Fria River – riparian habitat	No loss of aquatic or riparian habitats	Noise Impacts[1]
LeConte's thrasher	Hassayampa River vicinity – creosote bursage desert scrub	Habitat loss – long-term and minor	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts would be minor and short-term.

Table 4.16-2 Summary of Impacts to Special Status Species (Continued)

(Footnotes at end of table.)

SPECIES	POSSIBLE OCCURRENCE	IMPACTS	
		HABITAT LOSS	NOISE
Belted kingfisher	Agua Fria and Hassayampa Rivers	No loss of aquatic or riparian habitat	Noise Impacts[1]
California leaf-nosed bat	Sonoran desert scrub (foraging)	Habitat loss (foraging) – long-term and minor	Negligible
Cave myotis	Arid areas around cliffs (foraging)	Habitat loss (foraging) – long-term and minor	Negligible
Western red bat	Agua Fria River (foraging and roosting)	No loss of aquatic or riparian habitat	Noise Impacts[1]
Western yellow bat	Agua Fria River (foraging and roosting)	No loss of aquatic or riparian habitat	Noise Impacts[1]
Greater western mastiff bat	Hieroglyphic Mtns (roosting)	Habitat loss (foraging and roosting) – long-term and minor	Negligible
Prairie falcon	Cliffs (Hieroglyphic Mtns)	Habitat loss (foraging) – long-term and minor	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts to foraging individuals would be negligible.
Elf owl	East of US 60	Habitat loss – long-term and minor	Negligible
Costa's hummingbird	East of US 60	Habitat loss – long-term and minor	Negligible
Gila woodpecker and gilded flicker	East of US 60	Habitat loss – long-term and minor	Short-term and minor, if present
Crissal thrasher	Washes east of US 60	Habitat loss – long-term and moderate	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts would be minor and short-term.
Lucy's warbler	Washes east of US 60	Habitat loss – long-term and moderate	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts would be minor and short-term.
Bell's vireo	Agua Fria River – riparian habitat	No loss of aquatic or riparian habitat	Noise Impacts[1]

Table 4.16-2 Summary of Impacts to Special Status Species (Continued)

(Footnotes at end of table.)

SPECIES	POSSIBLE OCCURRENCE	IMPACTS	
		HABITAT LOSS	NOISE
Yellow warbler	Agua Fria River – riparian habitat	No loss of aquatic or riparian habitat	Noise Impacts[1]
Red-naped sapsucker	Agua Fria River – riparian habitat	No loss of aquatic or riparian habitat	Noise Impacts[1]
Lawrence's goldfinch	Agua Fria or east of US 60	Upland habitat loss – long-term and minor; No loss of aquatic or riparian habitat	Noise Impacts[1]
Sage thrasher	Throughout (overwintering habitat)	Habitat loss (winter) – long-term and minor	Short-term and minor, if present

[1]Impacts would differ among the Proposed Action and Alternatives; see **Sections 4.16.2.2** through **4.16.2.6**.
Note: All impacts not written in boldface would be the same for the Proposed Action and Action Alternatives.

Operations, Maintenance, and Decommissioning

Noise and Vibration

Routine maintenance activities would not impact wildlife or special status species. Human disturbance would be minimal in most cases and consist of single vehicle entries over established routes.

Unforeseen maintenance activities such as major or emergency repairs could have impacts similar to construction because heavy equipment would be necessary. It may not be feasible to schedule emergency maintenance activities with sensitivity to wildlife resources; thus adverse impacts to wildlife could occur. Emergency maintenance activities that took place during migratory bird nesting periods for instance would have adverse impacts on nesting success. In general, noise during maintenance activities would disturb and displace wildlife in the vicinity, but most activities would be short-lived and wildlife would return to the area following the disturbance. Impacts from emergency maintenance would be minor because only individuals in the immediate area would be affected.

Collisions

There exists the potential for raptors and other migratory bird species to be killed from power line collisions. Bird collisions with power lines result from a complex mixture of biological (characteristics of each species), environmental (such as land uses and weather), and engineering factors (such as aspects of line structure; Avian Power Line Interaction Committee [APLIC] 2012). Collisions can be minimized by marking lines (to increase visibility) and other precautions or modifications to existing lines following guidance in APLIC (2012).

Electrocution Risk

Transmission line structures are attractive sites for raptors and migratory birds to perch, roost, loaf, and nest (APLIC 2006). This behavior brings birds into the proximity of live power lines and can often lead to electrocution. Raptor electrocutions would be minimized by constructing the transmission line according to raptor-safe design standards, which meet or exceed recommendations from the Avian Power Line Interaction Committee (APLIC 2006). Individual migratory bird mortalities would be avoided and thus there would be no adverse impacts to any migratory bird species or population from electrocution. BLM policy does not permit incidental take of migratory birds.

Habitat Fragmentation

Populations of small mammals, amphibians, or reptiles could be fragmented by the transmission line if a portion of the population becomes isolated by or avoids the disturbance area. These impacts would be short-term and minor, as only local individuals would be affected. Individual mammal predators or bats would navigate around the disturbance area if necessary. Impacts to these individuals would be negligible to minor as some would be forced outside of normal movement patterns.

Habitats for migratory birds may be fragmented by the transmission line. Many migratory bird species require large, undisturbed areas of suitable habitat. Transmission lines, despite raptor/bird protection features, still pose a barrier for migratory flights and may reduce the security of the habitat (via increased predation along the edges, removal of cover, etc.), so that a large area of previously undisturbed habitat becomes two or more smaller areas of undisturbed habitat. These impacts would be long-term and moderate, because habitat capability for these species may be adversely affected.

Disturbance of desert wash habitat would adversely impact wildlife movements and linkage through the Study Area. Desert washes would be avoided during construction, if possible. If these areas are disturbed, impacts to species that use washes for movement (e.g., amphibians and aquatic reptiles during flow periods) would be moderate and long-term.

The Proposed Action and Action Alternatives follow the CAP canal, which serves as an east-west movement route for wildlife, for three miles near the Sun Valley Substation. There would be no disturbance to the CAP canal under the Proposed Action or any Action Alternative.

Permanent roads associated with the transmission line (14-feet wide) would not measurably disrupt wildlife behavior as these roads would be used very infrequently, and would not be improved (i.e., paved). Direct fragmentation impacts to wildlife from permanent roads would be negligible.

Increased access or predation

Operation of the transmission line would adversely affect birds, raptors, and small mammals that are vulnerable to predation from ground predators along the centerline disturbance or from raptors perched on the transmission structures or line. Small mammals and reptiles near the line would be vulnerable to predation by perched raptors. Some ground predators may become more common along the line due to facilitated access along the permanent roads,

thus smaller wildlife could also become more exposed to ground predators. These impacts would be long-term and minor, as only local individuals would be affected.

4.16.2.2 Proposed Action

Construction

The Proposed Action crosses south of riparian forests and woodlands that are adjacent to semi-permanent water in the Agua Fria River. No riparian habitat would be disturbed. The riparian habitat next to the route is continuous with riparian habitat to the north, and may be occupied by southwestern willow flycatchers, most likely as migration or non-breeding habitat. Therefore, southwestern willow flycatchers would be disturbed temporarily by noise. Other species may also be present in this habitat, including amphibians or aquatic reptiles, foraging or roosting bats, numerous migratory bird species, or any of ten other special status species: lowland leopard frog, snowy egret, bald eagle, belted kingfisher, western red bat, western yellow bat, Bell's vireo, yellow warbler, red-napped sapsucker, or Lawrence's goldfinch. Noise impacts to these wildlife and special status species would be short-term and minor, because only individuals in the immediate area would be affected.

Sonoran Desert Tortoise

APS would follow mitigation measures listed in **Section 4.16.3.1** for the Sonoran desert tortoise, including surveying and monitoring for desert tortoise within tortoise habitat in order to avoid take. If desert tortoises are encountered during construction, APS would follow BLM's Strategy for *Desert Tortoise Habitat Management on Public Lands in Arizona* and any appropriate guidance issued by AGFD and USFWS. Preconstruction and construction crews would look out for and avoid tortoises If tortoises must be moved to avoid harming them, they would be moved according to AGFD, "Guidelines for Handling Sonoran Desert Tortoises" (2007).

The Proposed Action crosses Category II and Category III tortoise habitat. Disturbances and degradation of tortoise habitat would be avoided or minimized during construction. The maximum amount possible of tortoise habitat would be maintained within the footprint of the Proposed Action in order to ensure the existence of viable populations within suitable habitat. Any disturbance of Category II and Category III tortoise habitat would be compensated at a rate determined by the BLM and APS, following DTCT 1991, which is Attachment 1 to IM AZ-2012-031. BLM's mandate is "no net loss" of desert tortoises or habitat.

The Proposed Action ROW would cross 135 acres of Category II desert tortoise habitat, which 1) may be essential to the maintenance of viable populations, 2) within which population density is medium to high or low density contiguous with medium or high density areas; and 3) contains a population that is stable or decreasing. This is the maximum amount of Category II desert tortoise habitat that would be disturbed by the Proposed Action and compensated following the Compensation for Desert Tortoise report (DTCT 1991).

The Proposed Action ROW would also cross 192 acres of Category III desert tortoise habitat, which 1) is not essential to maintenance of viable populations, 2) within which population density is low to medium and not contiguous with medium or high density areas, and 3) contains a population that is stable or decreasing. This is the maximum amount of Category

III desert tortoise habitat that would be disturbed by the Proposed Action and compensated following the Compensation for Desert Tortoise report (DTCT 1991).

There would be no net loss of desert tortoise habitat under the Proposed Action.

Operations, Maintenance, and Decommissioning

Impacts to wildlife resources, including special status species for operations, maintenance, and decommissioning activities would be as described in **Section 4.16.2.1**.

4.16.2.3 Alternative 1: Proposed Action with Additional Corridor

Construction

Riparian habitat impacts would be the same as under the Proposed Action as the alignment is the same across the Agua Fria River. Impacts to southwestern willow flycatcher and other riparian species from noise would be short-term and minor.

Sonoran Desert Tortoise

Desert tortoise habitat impacts would be the same as under the Proposed Action as the alignment is the same.

In addition, under this alternative, there would be a change in management of lands administered by BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor would impact additional wildlife resources and special status species located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to wildlife resources.

Operations, Maintenance, and Decommissioning

Impacts to wildlife resources, including special status species for operations, maintenance, and decommissioning activities would be as described in **Section 4.16.2.1**.

4.16.2.4 Alternative 2: ROW South of SR 74

Construction

Riparian habitat impacts would be the same as under the Proposed Action as the alignment is the same across the Agua Fria River. Impacts to southwestern willow flycatcher and other riparian species from noise would be short-term and minor.

Sonoran Desert Tortoise

The Alternative 2 ROW would cross 308 acres of Category III tortoise habitat. Any disturbance of Category III habitat would be compensated appropriately following the Compensation for Desert Tortoise report (DTCT 1991). There would be no net loss of desert tortoise habitat under Alternative 2.

In addition, under this alternative, there would be a change in management of lands administered by BLM, by establishing a multiuse utility corridor on lands south of SR 74. Co-location of future utilities within the proposed additional corridor would impact additional wildlife resources located on these lands. However, any future projects would be

subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to wildlife resources.

Operations, Maintenance, and Decommissioning

Impacts to wildlife resources, including special status species for operations, maintenance, and decommissioning activities would be as described in **Section 4.16.2.1**.

4.16.2.5 Alternative 3: Carefree Highway Route

Construction

The Alternative 3 route crosses the Agua Fria River at a point where the surrounding vegetation and habitats differ little between the uplands and the river channel. As under all Action Alternatives, no riparian habitat would be disturbed. No riparian habitat is in the vicinity of this alternative; therefore, there would be no potential noise impacts to southwestern willow flycatcher or other riparian species. Impacts to southwestern willow flycatcher and other riparian species would be negligible.

Sonoran Desert Tortoise

The Alternative 3 ROW would cross 244 acres of Category III tortoise habitat. Any disturbance of Category III habitat would be compensated appropriately following the Compensation for Desert Tortoise report (DTCT 1991). There would be no net loss of desert tortoise habitat under Alternative 3.

Operations, Maintenance, and Decommissioning

Impacts to wildlife resources, including special status species for operations, maintenance, and decommissioning activities would be as described in **Section 4.16.2.1**.

4.16.2.6 State Trust Land Route Variation Sub-alternative

Sub-alternative

Overall, impacts to wildlife would be as described in **Section 4.16.2.1**, with the exception of riparian species and desert tortoise, described below.

The Sub-alternative does not contain riparian habitat and no impacts to riparian species would occur.

Sonoran Desert Tortoise

The Sub-alternative also does not contain any designated desert tortoise habitat, although some marginally suitable habitat for tortoise exists within the common desert scrub habitats crossed by the Sub-alternative. There would be no net loss of desert tortoise habitat under the Sub-alternative.

Primary Segment Common to All Action Alternatives

Impacts to wildlife resources within the Primary Segment would be the same as described for the Sub-alternative, with the exception of wildlife species that utilize mesquite bosque riparian habitat, described below.

The Primary Segment would cross one area of North American Warm Desert Riparian Mesquite Bosque, which covers approximately one acre within the 200-foot ROW. This area would be avoided and would not be disturbed by construction. However, construction noise in surrounding areas may temporarily disturb species that utilize this habitat. No special status species in the Study Area are known to prefer mesquite bosque habitat; however, a variety of amphibians, birds, reptiles and foraging bats may utilize the habitat. Noise impacts to these wildlife species, if present, would be short-term and minor.

4.16.2.7 No Action Alternative

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on wildlife or special status species as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to wildlife or special status species located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

4.16.3 Mitigation and Residual Effects

Pre-construction surveys would be implemented during the migratory bird nesting season to locate raptor and other migratory bird nests. Surveys would be conducted in the layout/project planning phase so that sensitive areas (such areas with a high density of tortoises) can be identified and avoided if possible; and then again immediately prior (within a few days) to construction. The survey area would be determined by the timing of the survey (inside or outside the migratory season) and the buffer requirements. Survey areas for raptors would be determined by buffer requirements in Guidelines for Raptor Conservation in the Western United States (USFWS 2008a). If an active nest is found, a timing or spatial buffer would be implemented following BLM and USFWS guidelines. Each buffer would be implemented on a case-by-case basis, considering, for example, the duration of construction activities in the area and topographical barriers (if any) between the active nest and construction activities. The decision maker regarding buffers would be the Field Manager, with advice from the BLM Wildlife Biologist.

All ground-clearing/disturbance activities that could affect special status species or habitat would be monitored. A qualified biologist would be retained to conduct pre-construction activities to minimize or prevent impacts to Sonoran desert tortoises and active migratory bird nests. Monitors would be present where active migratory bird nests were located during pre-construction surveys to assure buffer distances are maintained.

All personnel working on site would complete a mandatory Environmental Awareness Program, which includes pertinent information on biological resource identification of special status species or species of concern. APS's environmental contractor, approved by the BLM, would provide this training. All training would be conducted by experienced and qualified biologists approved by the BLM. The training, at a minimum, would cover

identification of tortoises, how to move them according to AGFD guidelines, the protocols for waiting for clearances prior to construction, and when a monitor needs to be present. Migratory birds and active nests would be covered with a briefing on the criminal penalties of take under the Migratory Bird Treaty Act, as well as the protocols for waiting for clearances prior to construction and the need to comply with timing stipulations and/or buffers around active migratory bird nests.

Holes or pits created by construction would be covered when not in use and would be checked for animals prior to use, in order to minimize trapping or burying of wildlife.

Raptor electrocutions would be minimized by constructing the transmission line according to raptor-safe design standards, which meet or exceed recommendations from the APLIC (2006). Avian collisions with the power line would be minimized by following recommendations for bird diverters in APLIC (2012) in areas specifically identified as having high use.

Gates would be installed on permanent ROW access roads, as required by the land owner or land managing agency, or if APS finds it to be warranted, to restrict unauthorized vehicular access to the ROW. This would prevent unnecessary traffic along access roads that would disrupt wildlife behavior or cause direct impacts (collisions) to wildlife.

4.16.3.1 Mitigation specific to Sonoran Desert Tortoise

BLM objectives regarding mitigation for desert tortoises on construction projects are to 1) avoid, minimize, or eliminate loss or degradation of habitat and 2) avoid or minimize take of tortoises. On BLM-administered land, the following mitigation measures would be implemented along with compensation, following the Final Report on Compensation for the Desert Tortoise (DTCT 1991), for any desert tortoises or desert tortoise habitat that is disturbed on BLM lands, as clarified in BLM Instructional Memorandum No. AZ-2012-031.

The first focus of the desert tortoise mitigation policy is on avoiding and minimizing impacts to tortoises and their habitat. If an action with on-site mitigation measures would result in residual impacts, then compensation would be required. Category II habitats would be compensated for at a rate ranging from 2:1 to 5:1. Category III habitats would be compensated for at a rate of 1:1. Acquiring habitat is the primary means of compensation for impacts to tortoise habitat; however, compensation funds can also be used for other tortoise conservation efforts. Purchasing private lands with tortoise habitat would bring these lands into federal protection, making the habitat more secure. Further, reclamation of temporarily disturbed areas would also be conducted and would assist with restoring impacted habitat.

Compensation for habitat loss or take on BLM-administered land would involve either the direct purchase of privately-owned desert tortoise habitat for transfer to conservation management, or the direct payment of funds to an appropriate land management agency/entity for purchase of tortoise habitat or other tortoise management actions (DTCT 1991). However, acquiring tortoise habitat is the primary means of compensating for residual impacts (BLM IM AZ-2012-031).

To minimize the potential for desert tortoise mortality, prior to and during ground-clearing construction activities in desert tortoise habitat on BLM land, a desert tortoise monitor would

survey the ROW. The monitor would meet qualifications for GS-0486 series Wildlife Biologist according to the U.S. Office of Personnel Management (opm.gov) and have the necessary experience and expertise required by the BLM. The survey area would include the ROW plus at least a 50-foot buffer either side of the ROW. Construction monitors would be present in areas where tortoises or fresh tortoise sign was observed during the pre-construction surveys. Any potential tortoise shelter sites in harm's way would be cleared for tortoises and then rendered unusable (i.e., filled in or blocked with rocks or other native materials). If tortoises are encountered during the pre-construction phase or during construction, APS would follow BLM's Strategy for *Desert Tortoise Habitat Management on Public Lands in Arizona* and any appropriate guidance issued by AGFD and USFWS. Preconstruction and construction crews would look out for and avoid tortoises. If tortoises must be moved to avoid harming them, they would be moved according to AGFD, "Guidelines for Handling Sonoran Desert Tortoises" (2007).

As part of the Environmental Awareness Program, desert tortoise training would be provided to all construction personnel who would be present before and during the ground-clearing activities and any fencing of work areas within desert tortoise habitat. Training would cover identification of tortoises, how to move them according to AGFD guidelines, the protocols for waiting for clearances prior to construction, and when/if a monitor needs to be present. Desert tortoise training would also include general procedures on how to reduce tortoise mortality, such as checking stationary vehicles for tortoises, and recommendations on how to avoid disturbing tortoises that are detected. BLM would have in place any applicable and relevant enforcement procedures for these guidelines, similar to other construction projects on BLM land.

To minimize the potential for vehicle collisions with desert tortoises, vehicle speeds would not exceed 15 mph on all dirt access roads in desert tortoise habitat. Speed limit signs would be installed on all centerline access roads in desert tortoise habitat, and caution signs indicating the potential presence of Sonoran desert tortoises would be posted at the beginning of any such access road in desert tortoise habitat.

Following the implementation of mitigation measures, residual effects would still occur to wildlife resources as a result of the loss of wildlife habitat during construction activities, although there would be no net loss of desert tortoise habitat.

4.16.4 Unavoidable Adverse Impacts

The loss of wildlife habitat within all areas of permanent and temporary disturbance associated with the transmission line would be unavoidable.

All adverse impacts to wildlife or special status species during emergency maintenance activities, after all reasonable measures to protect wildlife have been taken, would be unavoidable.

4.17 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An *irreversible* commitment of resources occurs if the commitment cannot be changed once made. An irreversible commitment of resources occurs when resources are used, consumed, destroyed, or degraded during Project construction and operation and cannot be reused or recovered. It effectively removes the option of future resource use. *Irretrievable* commitments of resources occur when there are long-term losses of resource production or use. These losses are not permanent and can be reversed in the long term if Project facilities or land uses change.

4.17.1 Air Quality and Climate Change

There would be no irreversible commitments of air quality resources. Project construction would result in some minor degradation of air quality, due to emissions from vehicles and equipment as well as fugitive dust; however, air quality would return to baseline conditions following construction activities. Emissions and dust resulting from operations and maintenance activities would be temporary and minimal, and would also return to baseline conditions quickly following the activities. However, these temporary impacts could constitute irretrievable commitments of air resources.

Project construction would result in irreversible emissions of GHGs during construction and operation activities. In addition, the Project would result in the irretrievable loss of carbon sequestration by vegetation that is removed during construction activities. Temporarily disturbed areas, successful revegetated and reclaimed, would help to limit this irretrievable loss.

4.17.2 Cultural Resources

Cultural resources would be irreversibly committed if sites were inadvertently destroyed during Project construction or as a result of increased human activity in the Project Areas after construction activities. Irreversible commitments to National Register-eligible cultural resources would not occur during the operation of the transmission line due to visual impacts because the settings of the eligible historic properties in the Project Area are not essential to their significance.

4.17.3 Geology and Minerals

There would be no irreversible or irretrievable commitments of geological or mineral resources as a result of construction or operation of the transmission line because the Project would have negligible impacts on these resources, and would not affect the surface accessibility of these resources during the life of the Project. Any permanent alteration to surface topography from Project construction would not affect the productivity or future use of geological or mineral resources in the Project Area.

4.17.4 Hazardous Materials and Hazardous and Solid Waste

No irreversible and irretrievable impacts are anticipated. However, impacts to human health or the environment may be irreversible and irretrievable if hazardous materials or wastes are released improperly into the environment during construction or operation and maintenance activities. However, compliance with laws and applicable regulations, compliance with applicant-committed EPMs, and proper handling, containment, and disposal protocols for hazardous materials and wastes, the potential irreversible and irretrievable effects from the release of hazardous materials and wastes would be reduced to a low level.

4.17.5 Land Use and Range Resources

There would not be an irreversible commitment of land use resulting from the Project. Land use allocations and encumbrances could be reversed if Project elements were removed in the future. An irretrievable commitment of land would occur in the areas of permanent disturbances during the life of the Project.

There would not be irreversible commitments of range resources resulting from the Project due to the quick recovery of palatable vegetation. However, there would be a small irretrievable commitment of range resources where permanent disturbances occur for the life of the Project and for years following if the Project were abandoned and grazing activities could be reinstated at the same levels prior to Project activities.

4.17.6 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire)

There would be no irreversible or irretrievable commitments of human health and safety resources with regard to noise impacts because although construction activities would result in some minor degradation of the noise environment, noise levels would return to baseline conditions following construction. Noise resulting from operations and maintenance activities would be temporary, and would also return to baseline conditions quickly following the activities. These would not constitute irretrievable commitments of public health and safety resources due to their short-term duration.

There would be no irreversible or irretrievable commitments of human health and safety resources with regard to EMFs.

Impacts to human health and safety may be irreversible or irretrievable if a Project-related fire were to cause human injury or death. However, fire-prevention requirements associated with applicant-committed EPMs and regulations regarding equipment and transmission line design would reduce the risk to human health and safety from fire to a low level.

4.17.7 Paleontology

Paleontological resources would be irreversibly committed if inadvertently discovered vertebrate fossils are removed or destroyed during Project construction activities. However, the potential for this type of impact is reduced to negligible by the unlikely presence of these resources in the Project Area, in addition to implementation of applicant-committed EPMs and BMPs following BLM standards.

4.17.8 Recreation and Special Designations

There would be no irreversible commitments to recreation or special designations because although construction activities would result in some minor and temporary impacts to at least recreation resources, impacted areas would return to baseline conditions following construction and successful reclamation. The presence of aboveground features associated with the Project would constitute a long-term irretrievable change to the recreation setting and could result in displacement of recreation users or alteration of their experiences or activities for at least the duration of construction activities, and in some cases for the life of the Project, which would constitute irretrievable impacts.

4.17.9 Socioeconomics and Environmental Justice

The social and economic structure of Maricopa County would be altered by the Project. Once the transmission line is operational, electrical capacity would be increased to some communities, inviting additional development, land conversion, and an increased tax base. These impacts would likely constitute irreversible commitments to socioeconomic resources in the county as the availability of electricity would at least partially induce community growth and new development. Once an area is developed, it is unlikely that electric capacity would be reduced.

Private lands acquired by APS for the Project that change land use and taxes paid on the land would be irreversible and irretrievable commitments of tax resources.

The low-income community within three miles of the Project disproportionately affected aesthetically and economically by the transmission line would be an irretrievable impact of resources.

4.17.10 Soils

Irreversible and irretrievable commitment of resources includes the disturbance of soil resources with the implementation of the Project, resulting in soil losses and displacement during construction and due to increased erosion. Irretrievable commitments of soils would occur where soil productivity is reduced due to the presence of aboveground facilities. An irretrievable commitment of soils salvaged and utilized in reclamation would initially demonstrate a decrease in infiltration and percolation rates, a decrease in available water holding capacity, and a loss of organic matter. These effects would slowly be restored by natural soil development processes.

4.17.11 Transportation and Traffic

There would not be any irreversible commitments of transportation and traffic resources. The impact of the transmission line introducing an air hazard to the Thunder Ridge Airpark would be irretrievable commitment of resources, as it would occur for the life of the Project.

4.17.12 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants

Vegetation communities that would be disturbed within the ROW, access roads, or aboveground facilities would be an irretrievable commitment of vegetation resources as these areas could be restored if Project elements were to change or be removed. Although restoration of perennial and long-lived vegetation could take centuries, it would not constitute an irreversible commitment of resources.

Any infestations of invasive weeds would also be an irretrievable commitment of vegetation resources for as long as the infestations occur in place of native plant communities. Any fires caused by the increased incidence of invasive species would also be considered an irreversible commitment of resources until a native vegetation community was restored or regenerated.

Any loss of special status plant individuals within the disturbance areas would be an irreversible and irretrievable impact on the level of individuals for as long as the area is not able to be colonized by the species. Impacts to the population or species level would not be irreversible or irretrievable as the species could colonize a new or adjacent site. It is not expected that any irreversible or irretrievable impacts to special status plants would occur from the Project because of the limited presence of this resources within the Project Area, in addition to implementation of applicant-committed EPMs and BMPs following BLM standards.

4.17.13 Visual Resources

The presence of aboveground features and cleared areas associated with the Project would constitute an irretrievable commitment of visual resources wherever the line is visible and contrasts with the surrounding environment, for as long as the line is present. This would not constitute an irreversible commitment of visual resources.

4.17.14 Water Resources

Temporary impacts to natural drainages, floodplains, and water quality that may occur during construction activities would constitute irretrievable losses of surface water resources for the life of the Project. Properly implemented BMPs and EPMs during construction would reduce the potential for these impacts. The use of water for construction activities would constitute an irretrievable impact as essentially all the water used would be evaporated rather than discharged back to surface and groundwater and thus consumed. No irreversible commitments of water resources are anticipated.

4.17.15 Wildlife Resources, Including Special Status Wildlife and Migratory Birds

Irreversible and irretrievable commitments of wildlife resources would occur through incidental mortality of individuals, or incidental take in the case of special status species.

Project encroachment on riparian or desert wash habitats may result in short-term displacement of individuals in the vicinity, but would not be considered an irreversible commitment of wildlife resources. Any loss of nesting potential to migratory birds, including special status species, from encroachment into sensitive habitats would be an irretrievable commitment of resources for the nesting season that was affected. A loss of habitat capability for wildlife, including special status species and migratory birds, due to fragmentation of habitat caused by the transmission line would be an irretrievable commitment of resources for the life of the Project.

4.18 RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY OF RESOURCE

This section discusses the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity. It describes the effects of the short-term use of the public lands for the transmission line and whether the immediate use under each alternative is likely to adversely affect the productivity of the resource and be sustainable without significant degradation of the environment.

The commercial life of the transmission line would be 30 years or longer. For purposes of this analysis, "short-term" is interpreted to include construction and the commercial life of the Project. Long-term productivity would be the productivity of the resource at the conclusion of the commercial life of the Project. Short-term uses and long-term productivity potential for most resources discussed below would be similar between the Proposed Action and Action Alternatives. The short-term resource uses described below may also be compared to the long-term productivity of increasing the transmission capacity and reliability of electrical power to public and private customers. Any exceptions are noted below as appropriate.

4.18.1 Air Quality and Climate Change

The short-term effects to air quality resources in the Project Area would result mainly from vehicle emissions and fugitive dust. Long-term impacts to air quality would not be expected; future removal of the transmission line at the end of the life of the Project would not preclude the air quality from reverting to its previous state at the end of the operational life of the Project.

The clearing of vegetation within the Project Area and construction activities would contribute to climate change through the short-term generation of GHG emissions, although the long-term productivity of the atmosphere with regard to carbon dynamics from the Project is unknown.

4.18.2 Cultural Resources

The Project could result in physical destruction of National Register-eligible archaeological sites, which would result in a short-term use affecting long-term productivity. Although impacts would be mitigated by recovery and preservation of artifacts and information, the long-term productivity of the archaeological record would be reduced because the sites

would not be available for future investigations, when research methods and procedures might be improved.

4.18.3 Geology and Minerals

The local and minor alterations of surface topography that would result in some construction areas as a result of the Project would not affect the long-term productivity of geological or mineral resources in the Project Area. There would be no other significant short-term uses of geological or mineral resources during the operational life of the Project.

4.18.4 Hazardous Materials and Hazardous and Solid Waste

Short-term uses of the Project Area would adversely affect the long-term productivity of the environment if hazardous materials or wastes are released improperly into the environment and remediation efforts are not successful enough to restore the environment back to its baseline condition once the operational life of the Project has ended. Compliance with laws and regulations, applicant-committed EPMs, and following standard protocols for hazardous materials and wastes would reduce the likelihood of any accidental and/or improper releases.

4.18.5 Land Use and Range Resources

Most short-term effects on land uses in the Project Area would result from the ROWs and easements granted for the Project and the subsequent encumbrance of the lands involved for any other uses. Long-term impacts to land use would not be expected; future removal of the transmission line at the end of the life of the Project would not preclude land use from reverting to previous uses or to be converted to new uses allowable under land use plans at the end of the commercial life of the Project.

Short-term uses of range resources would result from construction activities and permanent Project features. Long-term losses in productivity of range resources would not be expected as forage would be restored with rehabilitation of the ROW at the end of the life of the Project.

4.18.6 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire)

There would be no affects to the long-term productivity of the human health and safety environment as a result of short-term noise or EMF changes during the operational life of the Project.

Areas disturbed by construction in the short-term may be subject to an increase in Fire Condition Class I to Fire Condition Class II if sufficient disturbance remains after decommissioning. These areas would be expected to remain at Fire Condition Class II, which would adversely affect the long-term productivity of the area with regard to fire danger and resulting human health and safety.

4.18.7 Paleontology

In the short term, paleontological resources could be inadvertently damaged or destroyed and could result in the loss of information, if vertebrate fossils are inadvertently discovered during Project activities, primarily through ground disturbance associated with construction activities. These impacts would be mitigated to the extent possible through data recovery or other appropriate treatment. Information and data retrieved through mitigation measures (i.e. data recovery) would represent short-term use of paleontological resources at the expense of future research opportunities. Thus, long-term productivity could be lost.

4.18.8 Recreation and Special Designations

Visual disturbances created by the removal of vegetation within the ROW would persist for many years beyond the life of the Project, but would fade as the structure and function of the natural vegetation was restored. Ultimately there would be no long-term impacts to the productivity of recreation resources with regard to the natural setting.

An increase in user-defined OHV trails as a result of the short-term uses of the Project Area (e.g., construction of the permanent ROW centerline access road) would conflict with the BLM's management strategy for the area and would create challenges for managing the natural resources and increase user-conflicts. However, APS' ROW authorization would require monitoring the centerline access route for unauthorized recreational use, and should it occur, it would require APS to take steps specified by the BLM to prohibit access and mitigate for adverse impacts resulting from unauthorized access. Even though this measure would help greatly reduce potential impacts, it would still constitute an adverse long-term impact to the productivity of recreation resources in the Project Area as defined by the BLM.

4.18.9 Socioeconomics and Environmental Justice

The short-term uses of workforce and resources (during construction) provide for short-term economic benefits through employment and purchasing within Maricopa County. These short-term uses would have a neutral effect on the long-term economic and social stability of the area.

The short-term use of the land for the ROW would adversely impact the long-term productivity of the low-income community that is within three miles for the life of the Project. Following the construction of the transmission line, there would also likely be long-term benefits of providing electricity which in turn would provide additional opportunities for development and increased tax bases and future growth within the Study Area, discussed in more detail in **Section 4.19**.

4.18.10 Soils

Disturbance to soils during construction activities would represent a short-term use of soil resources in the area. Reclamation of the temporarily disturbed areas would return the soils within disturbed sites to long-term productivity by utilizing salvaged topsoil in reseeded areas, while un-reclaimed or permanently disturbed areas would suffer a long-term loss of productivity.

4.18.11 Transportation and Traffic

The local short-term use of the roads and other routes that would provide access to the Project Area and proposed ROW would increase traffic levels during construction activities. However, local public access routes in the Project Area would be restored to conditions equal to or better than existed before the Project and there would be no long-term effects on transportation or traffic.

4.18.12 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants

Short-term and long-term disturbance of vegetation within the Project footprint would generally have an adverse impact on the long-term productivity of vegetation resources after the operational life of the Project due to the sensitive nature of desert vegetation and the difficulty in successful revegetation of disturbed areas. Upon removal of the transmission line and rehabilitation of the ROW, the structure and function of plant communities may eventually return. However, long-term impacts to vegetation would be apparent for many years after the completion of the life of the Project and whether or not the overall long-term productivity of vegetation would fully recover is unknown.

4.18.13 Visual Resources

Short-term impacts on viewsheds in the Project Area would be tied to temporary visual intrusions from construction activities and structures. The visual intrusion of the transmission line and the landscape contrast created by the linear disturbances due to the ROW clearing would remain for the operational life of the Project.

4.18.14 Water Resources

The long-term productivity of water resources would not be affected by any short-term uses of water resources during the operational life of the Project.

4.18.15 Wildlife Resources, Including Special Status Wildlife and Migratory Birds

Duration of construction activities and the short-term removal of habitat within the disturbance areas would constitute a short-term use. Habitat removal would adversely affect the long-term productivity of wildlife habitat for many species, including special status species and migratory birds, due to the sensitive nature and slow recovery of desert vegetation. Disturbed habitats may or may not return to former productivity, and most would not recover to former productivity within the operational life of the transmission line.

4.19 CUMULATIVE IMPACTS

Cumulative effects are those impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions in the Cumulative Impact Areas (CIAs), regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taken over a period of time. Major past and present land uses and disturbances in the area, which are also projected to continue into the future, include: roads, commercial and residential development, wildfires, livestock grazing, agriculture, and mining. Dispersed recreation (including hiking, OHV use, hunting, etc.) also occurs in parts of the CIAs.

4.19.1 Cumulative Impacts Area

The sizes of CIAs for this EIS vary by resource. The configuration of the Proposed Action and Action Alternatives provided the foundation for identifying CIAs. Cumulative effects should be evaluated in terms of the specific resource, ecosystem, and human community being impacted. An attempt was made for each environmental resource to determine the extent to which the environmental effect could be reasonably detected and then include the geographic areas of resources that could be impacted by the environmental effect. However, for simplicity, ease of cumulative impact analysis, and in an attempt to avoid having only slightly different CIAs for a number of resources, CIA boundaries were left identical for multiple resources where it seemed reasonable and conservative to do so. The CIA boundaries are reasonably sized to prevent dilution of the cumulative effects over large areas. Guidance from the CEQ, "Considering Cumulative Effects – January 1997," was used in identifying geographic boundaries and ultimately the CIA for each resource. The CIA for each environmental resource – and the rationale for its boundaries – is described in the **Table 4.19-1**.

Table 4.19-1 Cumulative Impacts Areas by Resource and Rationale

RESOURCE	CUMULATIVE IMPACT AREA	RATIONALE
Air Quality and Climate Change	The Maricopa County PM_{10} non-attainment area. Although the extreme western portion of the Project Area occurs outside this non-attainment area, it is located within five miles or less of the area boundary. **(Figure 4.19-1)**	Particulates and fugitive dust from construction activities are not expected to travel farther than several miles before settling to the ground, although incremental impacts overall should be considered for the county non-attainment area.

Table 4.19-1 Cumulative Impacts Areas by Resource and Rationale (Continued)

RESOURCE	CUMULATIVE IMPACT AREA	RATIONALE
Cultural Resources Geology and Minerals Hazardous Materials and Hazardous and Solid Waste Land Use and Range Resources Public Health & Safety (Noise, EMFs, and Fire) Paleontological Resources Recreation and Special Designations Soils Vegetation Resources, including Noxious and Invasive Weeds and Special Status Plants Water Resources Wildlife Resources, including Special-Status Wildlife and Migratory Birds	Proposed Action and Action Alternatives, plus a two-mile buffer around proposed routes and additional corridors. (**Figure 4.19-2** for CIA and **Figures 3.6-2** and **3.6-3** specific to Future and Existing Land Use)	The direct and indirect effects of the Proposed Action and Action Alternatives on the majority of these resources would be limited to direct disturbance areas, which are confined within the proposed routes and additional corridors for the linear facilities. A two-mile buffer should encompass potential indirect impacts. Erosion from wind and water movement in disturbed areas is expected to be minimal and typically would not extend beyond several miles from the disturbance. For some of these resources, the CIA boundary was chosen for simplicity purposes, as defined above, and the fact that vantage points from which the Proposed Action and Action Alternative routes and additional corridors, and other past, present, and reasonably foreseeable disturbances that can be discerned are roughly contained within these areas.
Range Resources	The full extent of each Burro Management Area and livestock (sheep and cattle) allotments that the Proposed Action and Action Alternatives cross, and the permitted range uses within these areas that could be impacted. **(Figure 4.19-3)**	The CIA would contain portions of each Burro Management Area, allotments, and permitted range uses that occur within the direct effects area and could be impacted by the Project, as well as other portions of the allotments outside of the direct effects area where livestock displaced by the Project could potentially be moved to.
Socioeconomics Environmental Justice	Maricopa County **(Figure 4.19-4)**	The Proposed Action and Action Alternatives occur within this county, and the use of the county for the CIA boundary allows for ease of gathering Socioeconomic data.

Table 4.19-1 Cumulative Impacts Areas by Resource and Rationale (Continued)

RESOURCE	CUMULATIVE IMPACT AREA	RATIONALE
Transportation and Traffic	Consists of all the existing transportation routes into the general Project Area including SR 74, US 60, and SR 303. **(**No Figure**)**	Transportation into the general Project Area would primarily be on these existing and established access routes. Transportation should not be noticeably affected outside of these major roads.
Visual Resources	Five-mile buffer around Proposed Action and Action Alternative routes and additional corridors. **(Figure 4.19-5)**	Encompasses the extent of the farthest KOP and the fact that vantage points from which the Proposed Action and Action Alternative routes and additional corridors, and other past, present, and reasonably foreseeable disturbances that can be discerned are roughly contained within this area.

All CIAs for the Project include a mixture of federal, State Trust, and private lands. Public lands managed by the BLM are used for a variety of purposes including dispersed recreation, wildlife, livestock grazing, mining, and transportation and utility corridors. Public lands are also managed for special values, including the Black Canyon SRMA, Castle Hot Springs SRMA, Hassayampa SRMA, Hells Canyon Wilderness Area, Hieroglyphic Mountains Special Management Area, Lake Pleasant HMA, and the Vulture Mountain ACEC. Public lands managed by USBR are managed to operate dams, power plants, and canals providing water and hydroelectric power. State Trust lands are generally managed for commercial uses that generate revenue for the benefit of Arizona's schools, or managed for wildlife (and their habitat), or recreation. State Trust lands are also developed for public purposes such as roads, utilities, and other infrastructure. Private lands have been developed for residential and commercial purposes, agriculture, roads, highways, landfills, airports, etc. The lands included in all of the CIAs contain a mixture of undeveloped lands, agriculture, cities and towns, roads and highways, utilities, commercial and residential development, military facilities, and mining.

Table 4.19-2 details the land ownership by CIA. The information in **Table 4.19-2** is referred to throughout the discussions by resource topic in the proceeding sections.

Appendix 4B provides a list and brief descriptions of past, present, and reasonably foreseeable projects and developments that contribute to cumulative effects. Many of these projects are discussed or referenced under the resource discussions that follow.

Table 4.19-2 Land Ownership by CIA

LAND OWNERSHIP	AIR QUALITY		VISUAL RESOURCES		CULTURAL RESOURCES, ETC. [1]		RANGE RESOURCES		SOCIOECON AND EJ	
	ACRES	% OF CIA	ACRES	% OF CIA	ACRES	% OF CIA	ACRES	% OF CIA	ACRES	% OF CIA
Bureau of Land Management	96,817	5.3	30,937	10.4	13,236	10.4	23,200	7.4	1,732,521	29.3
Bureau of Reclamation	11,263	0.6	10,883	3.6	3,624	2.8	15,328	4.9	13,842	0.2
U.S. Fish & Wildlife Service	-	-	-	-	-	-	-	-	1	0.0
U.S. Forest Service	120,726	6.5	-	-	-	-	-	-	655,350	11.1
Total Federal	228,806	(12.4)	41,820	(14.0)	16,860	(13.2)	38,528	(12.3)	2,401,714	(40.7)
Military	3,975	0.2	653	0.2	653	0.5	653	0.2	724,929	12.3
Indian Lands	187,443	10.2	-	-	-	-	-	-	269,927	4.6
Local or State Parks	93,140	5.0	4,332	1.5	-	-	3,643	1.2	100,571	1.7
County	3,265	0.2	2,951	1.0	485	0.4	1,753	0.6	4,113	0.1
Private	1,098,110	59.5	132,026	44.2	55,028	43.3	176,401	56.1	1,749,594	29.6
State Trust Land	229,500	12.4	116,875	39.1	54,162	42.6	93,488	29.7	640,788	10.9
State Wildlife Area	2,105	0.1	-	-	-	-	-	-	10,461	0.2
Total All Owners	1,846,344	100.0	298,657	100.0	127,189	100.0	314,466	100.0	5,902,098	100.0

[1]Includes cultural resources, geology and minerals, hazardous materials & hazardous and solid waste, land use, public health & safety, paleontological resources, recreation and special designations, soils, vegetation resources, water resources, and wildlife resources.

4.19.2 Past, Present, and Reasonably Foreseeable Actions

In 2010, Maricopa County had a population of 3,817,117 or 59.7 percent of the state's population of 6,392,017 (U.S. Census Bureau 2012a). There was a 24 percent population increase in Maricopa County and in the state between 2000 and 2010. Community development in the Project Area has been rapid and much of the past, present, and reasonably foreseeable actions and developments are a result of population increase. Although the Project Area is northwest of the densely populated greater Phoenix area, urban development is encroaching. As noted in **Appendix 4B**, numerous residential developments are planned and thousands of acres will be disturbed as a result (**Table 4.19-3**). For this analysis, it is assumed that essentially all of the private and State Trust land within the CIA will be developed as some type of residential which could include developed open space interspersed within the residential areas. Infrastructure to support that development, including roads, irrigation/water delivery, substations, power lines, and power plants, have been constructed and additional utilities and road projects are planned (**Appendix 4B**). Increased dispersed recreation and developed recreation facilities also contribute disturbances. Traditional activities such as grazing and mining also occur in the CIAs.

About half of the Project is located either parallel to SR 74 or is essentially adjacent at varying distances. This highway is currently a rural two-lane highway. SR 74 serves as a major regional transportation facility connecting I-17 to US 60 northwest of the Phoenix metropolitan area. SR 74 also connects with several regional arterial roadways that are not on the state highway system. Traffic flow is generally stable, but drivers are restricted in their freedom to choose their speed, change lanes, or pass (URS 2010). The majority of land abutting the highway is undeveloped with open desert bordering the roadway; however, future residential development is planned adjacent to the highway, which would increase traffic on SR 74.

Table 4.19-3 Potential Quantifiable Permanent Disturbance from Reasonably Foreseeable Projects within the Two-Mile CIA[1]

(Footnotes at end of table.)

PROPOSED PROJECT DISTURBANCE	ACRES	% OF CIA
Agriculture	329.9	0.3
Utilities	18.8	<0.1
Community/Municipal	6,485.6	5.1
Developed Recreation	27,818.0	21.9
Undeveloped	6,775.9	5.3
Water Infrastructure	1,568.3	1.2
Residential	82,403.0	64.8
Lake/Water	1,412.2	1.1

Table 4.19-3 Potential Quantifiable Permanent Disturbance from Reasonably Foreseeable Projects within the Two-Mile CIA[1] (Continued)

(Footnotes at end of table.)

PROPOSED PROJECT DISTURBANCE	ACRES	% OF CIA
Mining	54.2	<0.1
Primary Roads	345.2	0.3

[1]Includes cultural resources, geology and minerals, hazardous materials & hazardous and solid waste, land use, public health & safety, paleontological resources, recreation and special designations, soils, vegetation resources, water resources, and wildlife resources.

In the 1997 Maricopa County Transportation System Plan, SR 74 was given a "scenic overlay" and then in 2006, Maricopa County produced the SR 74 Scenic Corridor Guidelines to protect, preserve, and enhance the existing natural environmental qualities along the SR 74 corridor to the maximum extent possible, while providing for economic development opportunities. SR 74 has since been designated as a future Regional Transportation Plan Freeway (MAG 20087).

There are numerous planned community developments within the CIAs which are further detailed in **Section 4.19-7** and **Appendix 4B**. Projected growth will require infrastructure and roadway expansions, developments, and improvements. Due to projected growth, the ultimate concept for SR 74 is an asymmetrical 10-lane divided, controlled access, suburban freeway (URS 2010).

4.19.3 Air Quality and Climate Change

The CIA for air quality is the PM_{10} Non-Attainment Area for Maricopa County and totals approximately 1,846,344 acres (**Figure 4.19-1**). Maricopa County is managed to prevent exceedances of NAAQS, and to improve air quality; to date, the county has been unable to meet attainment standards for PM_{10} or ozone and therefore is in non-attainment status. However, data from the three monitoring stations (Glendale, Dysart, and Zuni Hills) near the Project Area indicate no exceedances of 24-hour PM_{10} standards during 2010.

Past and present disturbances including mining, agriculture, residential and commercial construction activities, industrial activities, and vehicle emissions have contributed to air quality issues. Two vehicle proving grounds near the Project Area (**Appendix 4B**), the former Chrysler Proving Ground and the Arizona Proving Ground (formerly Volvo), have contributed vehicle emissions and particulates within the CIA. The Chrysler Proving Ground is no longer in operation and therefore is not currently a source of emissions, but could be for fugitive dust.

Air pollution sources occur in higher density in and near the greater Phoenix area. Although the Project Area has for the recent past been relatively undeveloped, nearby Phoenix has impacted the air quality and caused the non-attainment status for PM_{10} and ozone, and the carbon monoxide attainment with a maintenance plan status.

Existing energy industry sources in the CIA include the Glendale Energy Power Plant, the Cotton Center Solar Plant, Sundance Generating Station (gas-fired), and West Phoenix Power Plant (gas-fired). Numerous substations and transmission lines move this electricity from the plants to the grid. Development of renewable energy sources will result in overall reductions in GHG emissions.

Vehicles are a major contributor of emissions and particulates. Air traffic associated with the LAFB and other small local airstrips have also impacted air quality.

Non-permitted air emissions sources potentially affect historic and current air quality in the CIA. Particulate matter sources of concern include: residential development; ranching; private and public grazing and agriculture; ground clearing in open lands and along utility corridors; road dust; smaller mining and rock crushing operations; recreational activities; transportation construction and maintenance efforts; and exhaust from vehicles.

Reasonably foreseeable new non-permitted emission sources, or changes from current emission patterns, are expected to include:

- Residential development and construction of associated infrastructure,
- Road construction and expansion,
- Growth in general rail traffic on the BNSF,
- Local and regional growth in auto, truck, and air traffic,
- Range improvement and fire management efforts, and
- Increased ground disturbances from:
    - vegetation changes associated with grazing and agricultural activities,
    - vegetation removal under or along utility corridors, along fire breaks, and from construction efforts
    - changes in emissions from non-permitted sources identified as currently existing.

Specific projects are identified in **Appendix 4B**.

Reasonably foreseeable actions in the CIA over the next 30 years would be expected to result in additional emissions to the Maricopa County non-attainment area for PM_{10} and the non-attainment area for ozone. Construction and operation of the reasonably foreseeable projects would be permitted and mitigated in accordance with regulation to ensure that they do not cause or contribute to exceedances of NAAQS. The overall cumulative impact of the existing and reasonably foreseeable emissions sources, including the Sun Valley to Morgan 500/230kV Transmission Line, would not be expected to significantly change the current air quality levels in the CIA. The overall impact of all other activity trends identified would be to maintain current air quality levels, possibly but not definitely a minor upward trend over time. Individual projects could have a very localized moderate impact on air quality, though not likely over any extended duration. Development of renewal energy sources, such as solar power, will result in overall reductions in GHG and assist with mitigating climate change and its impacts.

4.19.4 Cultural Resources

The CIA for cultural resources includes the Project components and a two-mile wide buffer surrounding them, a total of 127,189 acres (**Figure 4.19-2**). Land ownership is detailed in **Table 4.19-2** above. **Table 4.19-4** details the existing quantifiable general land uses within this CIA. Approximately 13,236 acres of the CIA are managed by the BLM, 3,624 acres by the USBR, 653 acres are military lands, and an additional 54,162 acres by the ASLD. This equates to 56.4 percent of the CIA under federal or state regulatory oversight. The remaining land includes 485 acres of county land and 55,028 acres of private lands which are generally not subject to Section 106 of NHPA or the Arizona State Historic Preservation Act.

Table 4.19-4 Existing Quantifiable Land Uses in Two-Mile CIA[1]

LAND USE DISTURBANCES	ACRES*	% OF CIA
Agriculture	342.9	0.3
Utilities	18.8	<0.1
Community/Municipal	3,074.0	2.4
Developed Recreation	3,000.2	2.4
Undeveloped	114,888.4	90.3
Water Infrastructure	1,568.3	1.2
Residential	3,045.8	2.4
Lake/Water	932.5	0.7
Mining	214.4	0.2
Primary Roads	125.8	<0.1

[1]Includes cultural resources, geology and minerals, hazardous materials & hazardous and solid waste, land use, public health & safety, paleontological resources, recreation and special designations, soils, vegetation resources, water resources, and wildlife resources.
* Not including Grazing Lands or Burned Areas - To lump all types of disturbances together would not provide an accurate picture of the CIA, some of which, though grazed or burned, is relatively undisturbed, although it acknowledges that some level of modification to the natural condition has occurred. Acreages are not necessarily exclusive and may overlap, therefore acreages may be slightly more than in **Table 4.19-2**.

Past and present disturbances to cultural resources in the CIA have been the result of utility installation, road development, ranching/agriculture, residential and commercial development, archaeological excavation, recreational activities, and likely vandalism and unauthorized artifact collection (**Appendix 4B**). The past and present land uses in the CIA have resulted in the loss, disturbance, theft, and burial of cultural artifacts and sites, as well as the modification and alteration of the setting of cultural sites and resources. The incremental degradation of cultural resources reduces the information and interpretive potential of historic properties. Development on state and federal lands requires that cultural resource surveys be conducted to determine the presence of cultural resource sites eligible for listing on the National Register; there is no such requirement for disturbance on private lands

unless there is a federal or state nexus. As directed by Section 106 of the NHPA, National Register-eligible sites are generally avoided or mitigated if avoidance is not possible for projects with a federal or state nexus. Projects/development disturbances conducted prior to 1966 (i.e., prior to NHPA) and/or those without a federal or state nexus generally did not identify/quantify cultural resource sites or impacts to them.

Sites that have been determined to be ineligible for the National Register did not require avoidance, have been discharged from management, and therefore have likely been impacted by the activities requiring the cultural resource inventory (i.e., development, utility installation, fence projects, road construction, etc.).

The reasonably foreseeable future disturbances in the CIA are quantified for the cultural resources CIA in **Table 4.19-3**, and are detailed in **Appendix 4B**. Changes to state and private undeveloped and agricultural lands within the CIA are likely as some of these lands get converted in the future to more residential, commercial, and recreational utilization. Planned community development constitutes the largest reasonably foreseeable disturbance (64.8 percent of the CIA) on privately owned and State Trust land (to be sold, leased, or developed). On the privately owned there would be no protection for cultural resources on those lands. Construction of proposed utilities and other ROW uses (i.e., roadways, pipelines, substations, power lines) within the CIA could also potentially impact eligible sites; however, if there is a federal or state nexus, avoidance and/or mitigation of impacts to National Register-eligible cultural resources would be required.

Increased disturbance from multiple actions could result in cumulative adverse impacts to as yet unknown cultural resource sites. Increased accessibility created by new roads built in association with projects can cause cumulative impacts related to increased public visitation, recreational impacts, unauthorized artifact collection, and vandalism.

Within the CIA for cultural resources, known quantifiable past and present disturbances total approximately 11,390 acres or 9.7 percent of the CIA. Proposed future disturbances, including the Sun Valley to Morgan Project, would potentially disturb approximately 107,633 acres. These past, present, and reasonably foreseeable disturbances total 119,023 acres, or about 93.6 percent of the CIA.

Current and future development will contribute to the cumulative effects, both direct and indirect, on prehistoric and historic cultural resources in the region. All proposed, reasonably foreseeable developments would be completed under the oversight of Section 106 of NHPA if there were a federal or state nexus and thus, Project impacts would be individually addressed. Development of a multiuse utility corridor (requiring an RMPA), under Action Alternative 1 or Alternative 2, on public lands would provide for additional development within that corridor; however, future developments would be subject to NEPA and under the oversight of Section 106 of the NHPA. Impacts to specific cultural resources would depend on the exact Project location and extent of ground disturbance, as well as land jurisdiction. Section 106 of the NHPA requires avoidance and/or mitigation of impacts to National Register-eligible cultural resources by federal undertakings. However, cumulative impacts to cultural resources from reasonably foreseeable projects would mostly result from ground disturbance related to new residential, commercial, or industrial developments on private lands without regulatory oversight.

Development of the Sun Valley to Morgan Project would result in a 0.1 percent increase in disturbance in the CIA over the next 30 years and could contribute to the loss of site integrity of up to six to nine sites, depending on the Action Alternative selected, if they could not be avoided by project design. This impact, in addition to other reasonably foreseeable future activities on federal or State Trust lands would be minor. Data recovery of NRHP-eligible sites that could not be avoided would expand the regional database and knowledge of prehistoric and historic contexts. The mitigation measures developed to avoid direct impacts to cultural resource would also minimize contributions to cumulative effects. Cumulative impacts to cultural resources from past, present, and reasonably foreseeable future activities would be minor to moderate.

4.19.5 Geology and Minerals

Potential effects to the geology and mineral resources consist of mineral resource depletion, removal of mineral resources from availability for development, and topographic changes. **Sections 3.4** and **4.4** discuss in detail the geology of the Project Area and the Project's likely affect on geology and mineral resources, respectively. The CIA for geology and minerals encompasses 127,189 acres (**Figure 4.19-2**). The past and present activities, such as road building, mineral extraction, and other infrastructure projects (**Appendix 4B**), have impacted the geology of the area due to terrain modifications and extraction of minerals.

Although there has been mining activity in the CIA in the past and active mining claims are present, there are no active mines in the CIA. Mining has disturbed approximately 214.4 acres within the CIA. There are twelve mine sites, two known to be for metallic minerals and one for non-metallic minerals within the CIA (USGS 2012). No active sand and gravel operations occur within the CIA.

Transmission lines and associated facilities overlap with mining claims where mining could have occurred in the past. As described in **Section 3.4**, several abandoned mine sites are found throughout the CIA. As commodity prices fluctuate and new uses are found for specific metals and other mineral products, some of these abandoned resources may become economically viable in the future and reopened. Since a substantial portion of the Project is located on alluvial fans and basin-fill material, it is highly unlikely that construction and operation of the Project would preclude development of any metallic mineral resources in the area.

The Project would have a long-term disturbance of between 130 to 142 acres, depending on the Action Alternative selected. Use of mineral products for the construction of roads, railroads, buildings and other facilities would likely occur in the future. Impacts from use of licensed gravel pits and other borrow sources are regulated and minimal. Construction of utilities, roads, and residential developments could alter surface topography. Mines for various mineral commodities would likely be developed if their economic value increases.

Under Action Alternatives 1 or 2, the designation of a multiuse utility corridor (requiring an RMPA) for future ROWs could alter or limit future access to mineral resources potentially encumbered by future linear ROWs.

Within the CIA, known quantifiable past and present disturbances total approximately 11,390 acres. The Proposed Action, or any of the Action Alternatives, when combined with

reasonably foreseeable actions and disturbances would contribute disturbance to geology and minerals and thus a cumulative impact. When combined, past, present, and reasonably foreseeable future developments/disturbances, as presented in **Table 4.19-3**, total 119,023 acres. This equates to disturbance of 93.6 percent of the CIA. However, much of this would be surficial and would not affect geology or minerals. The cumulative effects of the Project, when combined with past, present, and reasonably foreseeable disturbances, on mineral and geological resources would be minor and its effect on topography would be negligible to minor.

4.19.6 Hazardous Materials and Hazardous and Solid Waste

The CIA for hazardous materials and hazardous and solid waste includes a two-mile buffer surrounding the Proposed Action and Alternatives, a total of 127,189 acres (**Figure 4.19-2**). Past and present activities that generate hazardous materials and/or hazardous and solid waste have included mining, residential development, road and utility development, energy development (i.e., substations), two vehicle proving grounds, and military installments. **Section 3.5** summarizes known hazardous materials sites and facilities within and near the Project and CIA.

Reasonably foreseeable generators of solid and/or hazardous waste in the CIA include the construction/development of the proposed LAFB Solar Project, the Sun Valley to Trilby Wash to Palm Valley Double Circuit 230kV Line, the Trilby Wash Substation, and several transportation projects, among others (**Appendix 4B**). All construction projects would be required to comply with all state, federal, and local regulations relevant to the handling and disposal of all wastes.

All solid and hazardous wastes generated during the construction phase and during the operations phase of the Project would be transported to licensed facilities off-site for treatment and disposal. In the context of existing and reasonably foreseeable solid and hazardous waste generation locally and regionally, the Project would constitute a minor increase in waste generation and management, well within existing capacities and infrastructure.

Given the existing capacity and regulatory framework for generators, transporters, and TSD facilities, the Project in combination with the other reasonably foreseeable projects and activities would have minor cumulative effects on solid and hazardous waste generation and management. The Project would comply with all local, state, and federal regulatory requirements.

4.19.7 Land Use and Range Resources

4.19.7.1 Land Use

The CIA for land use includes a two-mile buffer surrounding the Proposed Action and Alternatives (**Figure 4.19-2**). As noted in **Table 4.19-2**, 13.2 percent of the CIA is under federal jurisdiction while another 42.6 percent is State Trust lands. There are also 653 acres of military lands which make up 0.5 percent of the CIA. The remaining 43.3 and 0.4 percent are private and county lands, respectively. Federal or public lands are managed for a variety

of purposes, primarily related to preservation, recreation, and development of natural resources. State Trust lands are not public lands, but are instead managed as a public Trust created to support the education of children which is accomplished in a number of ways, including the sale and lease of State Trust lands for grazing, agriculture, municipal, school site, residential, commercial and open space purposes.

Past and present developments and disturbances related to land use were presented in **Section 3.6** and are listed in **Appendix 4B**. The majority of land in the CIA is currently undeveloped (**Figure 3.6-2**; 115,821 acres or 91.0 percent) with open desert and areas identified as future residential development areas (**Figure 3.6-2**). The USBR manages the Waddell Canal, the Maricopa Water District manages the Beardsley Canal and the New Waddell Dam/Reservoir, and the CAWCD manages the CAP Canal. There are existing and planned recreational trails within the CIA, most on BLM-managed public lands and some owned and maintained by Maricopa County. The Lake Pleasant Regional Park is located in the northeast portion of the CIA, north of SR 74, and relies on SR 74 for access to entrances and marinas. The cities of Peoria and Surprise have annexed some of the CIA surrounding SR 74 to the north and south. In general the CIA is characterized by open desert, lands used for grazing, mining, utilities, recreation, and widely dispersed residential development. In some areas, open desert has been converted to residential, commercial, and industrial uses (e.g., military, railroad, electrical substations).

State Trust lands south of SR 74 and just west of the Morgan Substation would be directly impacted by visual effects and ground disturbing activities, adding to a landscape already impacted by multiple transmission lines (pers. comm. ASLD May 23, 2013).

Future and planned land uses in the CIA include residential, mixed use, commercial development, and parks and open space (see **Figure 3.6-2**). These future uses are defined under the general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008a; Town of Buckeye 2008). Approximately 51,343 acres, or 94.8 percent, of the State Trust lands within the CIA are included in future residential/community developments.

Planned residential developments in the Town of Buckeye, unincorporated Maricopa County, and the cities of Surprise and Peoria that are located within two miles of the Proposed Action route, ACC-certificated route, and all other Action Alternative routes are listed in **Table 4.19-5**.

Table 4.19-5 Planned Residential Developments within the CIA

TOWN OF BUCKEYE	CITY OF SURPRISE
Douglas Ranch Festival by Lyle Anderson Sun Valley Villages I and II Spurlock Ranch	Grand Vista Marisol Ranch
UNINCORPORATED MARICOPA COUNTY	**CITY OF PEORIA**
Coyote Trails Asante West Broadstone Ranch Warrick Properties Roesner Ranch Lake Pleasant Grande Oasis Peak View Estates Unit 2 and 3 Trail of Light Walden Ranch Rancho Cabrillo Rancho Maria	Saddleback Heights Quintero Vistancia Cholla Hills Lake Pleasant Heights

Source: Maricopa County 2012

The full development of the Lake Pleasant Heights, Saddleback Heights, and Vistancia communities in conjunction with the Project and planned future expansion of SR 74 would significantly change the land use in this portion of the CIA. Community development including residential, commercial, and business components would transform the existing rural land uses to urban/suburban. This would be a major land use cumulative effect in this portion of the CIA.

In order to accommodate the planned development, additional utilities would be required. Future utilities would include fiber optic, water, sewer, gas, and power lines. Main trunk lines as well as distribution systems for each of these facilities would be necessary to service the developing communities.

The future SR 74 expansion would require new ROW along the entire length of the highway between US 60 and I 17. The existing ADOT ROW corridor is 200 feet wide centered on the roadway. The widening would require an additional 200-225 feet of ROW for the majority of the corridor. The total ROW needed from each agency is as follows: State Trust lands – 421.5 acres (55.8 percent), BLM – 244.0 acres (32.3 percent), USBR – 29.5 acres (3.9 percent) and from private owners – 60.7 acres (8.0 percent).

Of the 54,162 acres of State Trust lands in the CIA, currently 53,545 acres are undeveloped; this changes drastically in the foreseeable future with 51,343 potentially sold or leased for developments (residential, municipal, recreation/open space, etc.); this equates to 94.8 percent of State Trust lands within the CIA being developed.

The Project would have a long-term disturbance of between 130 to 142 acres, depending on the Action Alternative selected. Reasonably foreseeable projects and development would convert an additional 107,633 acres of the CIA for development of master planned communities, recreation facilities, community/municipal infrastructure, roads, and utilities. These developments when combined with past and present disturbances would total 119,023 acres or 93.6 percent of the land use CIA and would result in further changes to the types of land uses and would continue to alter the landscape. Under either Action Alternative 1 or Alternative 2, the designation of a multiuse utility corridor (requiring an RMPA) on public lands would provide for additional development, however future developments would be subject to NEPA.

In general, an increase in developments would contribute to the modification of the character of the CIA. As development occurs, the rural environment would become increasingly more residential, commercial, and industrial. Large developments that require many employees would spur other commercial and residential growth, causing the need for improved transportation corridors and other infrastructure. If populations increase as a result of large developments, the use of designated recreation areas and dispersed recreation within the CIA also could increase. In addition, the quality of the recreational setting could be degraded by the loss of a wilderness aesthetic, visual intrusions upon the landscape, and potentially increased regional haze due to the cumulative increase in development. This would further reduce the amount of open space in which to recreate, but would increase the ability to meet the energy needs of developing and nearby communities. The cumulative effects of past, present, and reasonably foreseeable projects to land use would be major, although this Project would contribute only negligibly to this overall cumulative effect.

4.19.7.2 Range Resources

The CIA for range resources encompasses the livestock allotments intersected by the Project (**Figure 4.19-3**) and totals 314,466 acres.

Livestock grazing is permitted on approximately 39,802 acres of BLM-managed public land and 85,308 acres of State Trust land within the CIA (39.8 percent). The past and present activities discussed above in land use have had a direct effect on the extent of grazing and the amount of forage available in the CIA. Residential and commercial development has encroached on lands used for grazing and reduced the amount of land and forage available in the Douglas, Lower Bo Nine, Bo Nine, West Wing Mountain, Ridgeway-Kong, Lockett, and Desert Hills BLM allotments and Douglas, Lockett, Desert Hills, Maughn, Durbano, Sheep Springs, Widow Snell, and four unknown name State Trust land allotments.

Reasonably foreseeable projects, as discussed above under Land Use, would result in further changes to the vegetation communities that are used as forage for cattle grazing in the CIA. State Trust lands sold or leased for developments would no longer be available for grazing. Commercial development would result in the removal of vegetation communities and forage. The growth of master planned communities would convert more lands to structures and urban landscaping. Further, construction of roads and freeways would result in the removal and transformation of native vegetation communities to roadways, with a mixture of urban and native vegetation reclamation in the ROWs.

The Project would convert an additional 130 to 142 acres of land from generally open desert to utility ROW depending upon the Action Alternative selected. This would represent less than 0.1 percent of the CIA. This would further reduce the amount of open space in which to graze cattle. This effect when combined with past, present, and reasonably foreseeable projects would constitute only a negligible amount to the moderate to major cumulative impact on range resources.

4.19.8 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire)

The CIA for Public Health and Safety is the same as Cultural Resources (**Figure 4.19-2**). The following subsections provide information on the cumulative impacts of noise, EMFs, and fire and fuels management as the topics relate to public health and safety.

4.19.8.1 Noise

The current land ownership (**Table 4.19-2**) and uses within the CIA (**Table 4.19-4** and **Appendix 4B**) indicate dominant and/or likely noise sources. The ambient sound environment within the CIA would generally be expected to vary with proximity to the major transportation routes and developed areas.

Air traffic impacts are generally restricted to near the vicinity of the few isolated small and/or private air strips in or adjacent to the CIA. Takeoffs and landings generate brief but loud local impacts. Military aircraft utilize a portion of the CIA when flying to/from the LAFB Auxiliary Field #1. The F-35 aircraft pilot training center will be coming to LAFB, which could result in additional noise impacts if the aircraft uses the Auxiliary Field #1 during training. Commercial and industrial activities in the CIA can produce localized noise but these are few in number. The most prominent noise impacts in the CIA result from transportation sources and ranch, residential, or small development sounds generated in areas of comparably higher population density. Rail traffic associated with the BNSF currently generates noise impacts through the central portion of the CIA, with the railroad traversing northwest-southeast through the CIA. Sound generated by current rail traffic along the BNSF elevates current noise levels within 0.25-mile of those tracks.

Development of the numerous planned communities, as discussed in **Section 4.19.7**, would generate increased noise as the residences and associated infrastructure (i.e., roads) are constructed and recreation areas are developed. Additional residential development could increase the air traffic noise impacts and lead to noticeable increases in noise levels along approaching and departing flight paths. Use of helicopters in construction of the transmission lines would produce noise impacts along their flight paths, but only during construction in localized areas of the Project after transmission structures have been installed. The development of the various power facilities (**Appendix 4B**) would likely result in moderate short-term noise impacts during construction and long-term minor noise impacts in the CIA, approaching moderate impact levels at only the closest residences.

Increases in commercial activity in and near the CIA would include construction and operation of electrical generation facilities. These would increase noise levels in the immediate vicinities of these activities. Increases in area population due to planned

community developments would increase noise generated by vehicular traffic and recreational vehicles. Expansion and construction of roadways associated with residential developments would increase noise as well. Noise caused by the construction of the Proposed Action or Action Alternatives combined with present and reasonably foreseeable noise effects from air, vehicle, and rail traffic in and near the CIA would be minor.

4.19.8.2 EMFs

There are several existing sources of EMFs in the CIA including the Humbug Substation, Lakeside Substation, Morgan Substation, Morristown Substation, Oberlin Substation, Raceway Substation, and various portions of 69kV, 230kV, and 500kV transmission lines.

Reasonably foreseeable future sources of EMFs include the Sun Valley Substation, the Sun Valley to Trilby Wash to Palm Valley Double-circuit 230kV transmission line, and other sources likely to increase as development continues within the CIA.

Once operational, the EMFs associated with the Project would not combine with the impacts of other projects because the impact would only occur in the immediate area of this Project. The addition of other new lines (e.g., Sun Valley to Trilby Wash to Palm Valley double-circuit 230kV transmission line) would not change the level of effect at any specific location. Similarly, negligible impacts associated with EMF exposure from transmission lines would only occur in the immediate vicinity of the lines. The Project is not anticipated to contribute any more than negligible to minor cumulative public health impacts associated with EMF due to its distance away from any potential receptors.

4.19.8.3 Fire

Past, present, and reasonably foreseeable projects and disturbances (**Appendix 4B**) increase the cumulative level of human influence adjacent to wildlands and potentially increase the number of human-caused wildfire ignitions. The Project's contribution to increased probability of human-caused wildfire ignitions would be minor based on the short duration of construction activity. The presence of the overhead transmission line would create an ongoing source of potential wildfire ignitions for the life of the Project. Ignitions can be caused by such unpredictable events as lightning strikes, conductor contact by flying debris, mechanical malfunction or failure of transmission line components, and miscellaneous collisions (i.e. birds, helicopters, planes). These events are rare but would be unavoidable. When considered in combination with other reasonably foreseeable projects in the CIA, the potential for wildfire ignitions would be a minor cumulative impact.

In summary, cumulative impacts from reasonably foreseeable projects would be expected if construction and operation of the projects resulted in an increase in the risk of wildfires or an increase in ambient noise or EMFs. However, fire protection measures and project design features would mitigate and/or minimize potential risks. Therefore, the cumulative fire hazards and cumulative effects from potential noise and EMFs associated with these projects would be minor.

4.19.9 Paleontology

South-central Arizona has yielded paleontological resources that have contributed to the understanding of the development and history of life on earth. Paleontological resources are subject to cumulative impacts via loss through both natural processes of erosion and weathering, and man-made disturbances. Cumulative effects to paleontological resources occur through the incremental degradation of the resources from various impacts, which reduce the information and scientific research potential of the resources.

The current land ownership and uses for (thus disturbances within) the paleontological resources CIA (**Figure 4.19-2**) can be found in **Tables 4.19-2** and **4.19-3** above.

Natural processes such as soil erosion and rock weathering have exposed fossils.

As discussed in **Section 3.4**, there are mining districts within or near the CIA. Also noted in **Section 3.4**, there are active sand and gravel operations in the CIA. All of these endeavors include ground disturbing activities related to exploration, development, and extraction that could encounter paleontological resources. Further, roads, power lines, pipelines, utility construction, and residential development can impact near surface deposits of paleontological resources in general and possibly deeper deposits in areas that required excavation through landforms.

Vertebrate fossils such as dinosaurs, mammals, fishes, reptiles, and uncommon invertebrate fossils are collected by trained researchers under BLM permit. These remain public property and are placed in museums or other public institutions after they are studied. Although the resources are removed from their original context, the documentation adds to the body of knowledge about paleontological resources in the region. However, casual use and un-permitted collection of fossils has contributed to the loss of the resource and its research potential and interpretation.

The reasonably foreseeable future actions applicable to the CIA all have the potential to impact paleontological resources. However, as some of the land in the CIA is publicly administered, projects on these lands would be subject to NEPA and federal and state regulations protecting paleontological resources. Any future mining development on public lands would require an inventory of paleontological resources, as well as documentation or collection of specimens uncovered during operations.

Community development projects have the potential to impact paleontological resources as well. Private development does not afford the same protections and standard operating procedures as activities under federal administration.

Geological formations with exposures containing paleontological resources would continue to be impacted by natural agents (e.g., erosion, rock weathering, surface water drainage).

Within the CIA for paleontological resources, known quantifiable past and present disturbances total approximately 11,390 acres. Reasonably foreseeable developments and projects would increase this to 119,023 acres (**Table 4.19-3**) of disturbance.

Encountering paleontological resources during development/disturbance has the potential to destroy and/or lose the resource. However, it also has the potential of providing additional data and rare or previously unknown specimens which can further scientific knowledge.

Additional impacts to paleontological resources in conjunction with the Project would not be known until discovered and evaluated. Impacts to paleontological resources associated with federal land management decisions/actions would be minimized or reduced in accordance with federal legislation and existing standard operating procedures. Cumulative impacts to paleontological resources would be negligible to minor.

4.19.10 Recreation and Special Designations

The CIA for recreation and special designations is the two-mile buffer as described in **Table 4.19-1** and shown on **Figure 4.19-2**. Special designations provide opportunities for solitude and primitive, unconfined recreation and protect natural or undeveloped landscapes and resources. A portion of the Castle Hot Springs SRMA is within the CIA. The Castle Hot Springs SRMA, as described in **Section 3.9**, is managed for motorized and non-motorized recreation and provides opportunities for developed camping, OHV use with single- and two-track routes for general motorized recreation use, and organized OHV events, horseback riding, bicycling, hiking, and picnicking. Other lands within the CIA provide opportunities for dispersed and developed recreation. Dispersed recreation includes camping, hunting, wildlife observation, photography, backpacking, horseback riding, hiking, and backcountry driving. Developed recreation includes city and regional parks, OHV trails, and a raceway. A portion of the Maricopa Trail which is part of the Maricopa County Regional Trail Plan is located within the CIA. The trail begins at the Agua Fria trailhead located approximately 1.5 miles south of Lake Pleasant.

Residential and commercial developments have lead to surface disturbances and converted native vegetation communities to urban landscaping. Population growth has increased traffic and pressure in recreational areas. The mixture of land use development in the CIA has altered the land, its character, and the viewshed.

The past and present land uses in the CIA total 11,390 acres which equates to development of approximately 9.7 percent of the CIA. Developed recreation includes about 3,000 acres (2.4 percent) and is expected to increase to 27,818 acres or 21.9 percent of the CIA (**Table 4.19-3**).

The Project would have a long-term disturbance of between 130 to 142 acres, depending on the Action Alternative selected. Reasonably foreseeable projects in the CIA would disturb another 107,633 acres which includes planned communities, community/municipal infrastructure, utility development, recreation facilities, and roadway expansion/construction. Reasonably foreseeable activities also include the BLM's Travel Management and Recreation Activity Plan/EA for the Castle Hot Springs Management. This plan would designate routes and guide recreation management north of SR 74.

The Project could increase the level of difficulty or expense of managing access and public use around this new linear disturbance. Converting the transportation corridor to the north of SR 74 or the BLM-managed public lands south of SR 74 to a multiuse utility corridor, should the corridor be developed with additional utilities, would result in further degradation of the natural feel of the area, and would create several construction routes or potential long-term centerline access routes that would make it difficult to prohibit recreation use. The area would be difficult to manage to prevent route proliferation. Extensive use of the area by four-

wheel OHVs would likely convert all single-track routes to two-track, eliminating this recreational resource. Extensive use of two-track routes in this area could generate dust in violation of county regulations and ultimately result in closure of the area to OHV recreation.

Maricopa County has proposed four future trails that would be located within the CIA. These trails have been approved by the Maricopa County Board of Supervisors, but their exact locations could shift.

Except for construction of trails, developments on public, State Trust lands, and private land would result in a loss of opportunities for dispersed recreation and would impact opportunities for solitude and primitive recreation by affecting the viewshed of the recreation setting which affects the recreation experience. The growth of cities and towns would convert more lands to structures and urban landscaping. Construction and expansion of highways and roadways would result in the removal of native vegetation, increased noise, and increased visitation.

The population in the CIA is expected to grow substantially as indicated by the reasonably foreseeable planned community development projects. Conversion of land from undeveloped open desert to residences/communities and the associated infrastructure (i.e., transmission lines, roadways, etc) would decrease the opportunity for dispersed recreation and solitude. The most likely cumulative effects to parks and special designation areas (such as Castle Hot Springs SRMA) would be related to changes in visitation levels. Cumulative impacts would include intensified use in certain areas, especially for motorized activities, as recreation increases and growth and development occur near recreation areas. General plans for the Maricopa County and area communities include provisions for open space, which is usually for parks or non-motorized recreation, further concentrating motorized activities on public lands.

The expansion of SR 74 from two to ten lanes is planned for lands to the north of the present SR 74 alignment on BLM-managed public lands. This expansion would remove a portion of public lands currently used for OHV recreation from the recreation land base, and obliterate a number of BLM-designated OHV trails just north of SR 74. Reconstruction of SR 74 could enhance or restrict access to adjacent areas. A wider highway would create negative visual impacts as seen from the Castle Hot Springs SRMA and other areas. Overall cumulative impacts to recreation would be moderate.

4.19.11 Socioeconomics and Environmental Justice

The CIA for Socioeconomics is Maricopa County, a total of 5,902,098 acres (**Figure 4.19-4**). This is identical to the Study Area discussed in **Sections 3.10** and **4.10**. All data on socioeconomic conditions, fiscal conditions, public services and utilities, and environmental justice apply to the CIA analysis. The past and present land uses in the CIA have had a direct effect on socioeconomics of Maricopa County through changes to employment (both type and amount), changes to the landscape which effect sense of place, increased housing availability, and changes to the overall population. Past and present actions have resulted in the current socioeconomic conditions in the CIA, as described in **Section 3.10**.

Reasonably foreseeable projects include numerous master planned communities/housing developments, four solar power generating facilities, substations and power lines, highway

and road construction/improvements projects, and other utility/infrastructure projects (**Appendix 4B**). In addition, the Saddleback Heights master planned community includes extensive plans for commercial, business and employment, and resort development. Construction of the reasonably foreseeable projects within Maricopa County would create positive, temporary impacts on local economies and increased employment opportunities, drawing on the large regional construction workforce in the Phoenix area, where there is currently a considerable supply of qualified workers. Concurrent construction of similar projects could result in a demand for labor that cannot be met by the region's labor pool, which could lead to an influx of nonlocal workers. This population increase could impact socioeconomic conditions and public services and utility.

Construction of the proposed transmission line in conjunction with renewable energy generation projects (such as solar generating stations) would facilitate the transmission of energy to consumers, and may encourage additional development of renewable energy sources.

Master planned communities would increase the housing availability within the CIA and would put additional demands on public services and utilities. The Project 500kV circuit line would be installed for a proposed 2016 in-service date and the 230kV circuit would be strung on the same structures in the future when necessitated by load growth, currently projected beyond 2021. The Project in conjunction with reasonably foreseeable energy, utility, and other infrastructure projects would support the population increases for the foreseeable future.

Lots within master planned communities that adjoin transmission line ROWs are typically designed to be larger than other lots to make them attractive and compensate for the presence of the transmission line. The cumulative effect of development of the master planned communities with the transmission line would be home sites or new homes adjoining the ROW that are larger than other lots, and yet experience a delay in sales of these properties (compared to properties that don't adjoin ROWs). This delay is referred to as the "cost to carry;" an economic cost to the owner/developer during the period of time that the investment or asset remains in inventory. Lots adjoining the ROW would be expected to have a greater cost to carry.

As stated in **Section 4.14**, the presence of the transmission line may delay or inhibit the extent of the planned full build-out of the master planned community. If the presence of the transmission line reduces the number of home sites or residences in the community, or reduces the value of the home sites or residences, there could be cumulative impacts to tax revenue and other economic drivers. A reduced number of home sites or residences, or a reduction in the value of those with the presence of the transmission line would result in lower tax revenue than what would have been generated without the transmission line. Fewer home sites or residences would mean fewer property owners constructing new homes or making local purchases to improve their property than would have otherwise occurred without the transmission line.

In cases where bonds are issued to fund infrastructure development within the master planned communities, delay or inhibiting of full development, delay in lot sales, or delay in residential construction could adversely impact bond repayment.

From a lifestyle perspective, further development within the CIA would change the landscape characteristics, existing landforms, and vegetation in the area which would contribute to an overall change in the sense of place for residents of the county. With the exception of the urban developed areas, the CIA has a rural, moderately developed landscape. Reasonably foreseeable projects such as power lines, substations, solar facilities, extensive master planned communities with business and commercial services aspects; freeways and parkways; and other utilities would shift the landscape to a more developed, urban landscape and would adversely impact local residents and visitors to the area who are seeking a rural residential community or a semi-primitive view or recreation experience. The initial wave of new residents to the area may purchase property and establish residences for the sense of connection to the natural environment and spacious natural views, and find that those qualities transitioned to a suburban setting at full community development. Past, present, and reasonably foreseeable projects would constitute moderate cumulative effects to socioeconomics within the CIA.

4.19.12 Soils

The CIA for soils is the Project's Action Alternatives with a two-mile buffer (**Figure 4.19-2**) encompassing 127,189 acres. Disturbed soil loses its structure and porosity when disturbed through displacement or compaction by heavy equipment. Consequently, the soil is more prone to erosion by water or wind and may be less able to support some kinds of vegetation (loss of productivity).

The primary source of impacts to soils is surface disturbance which is directly tied to land use. The types of past and present disturbances that may affect soils in the CIA are the same as those described for land use in **Section 4.19.7**, including road construction, livestock grazing, agricultural activities, master planned communities/residential housing development, energy development, recreational use, utility corridors, and mining activity. Specific projects, legislation, and disturbances that have affected soils are described in **Appendix 4B**. Existing quantifiable land use within the soils CIA totals 11,390 acres (**Table 4.19-4**).

The Project would have a long-term disturbance of between 130 to 142 acres, depending on the Action Alternative selected. In addition, the reasonably foreseeable future disturbances in the CIA that may affect soils would include the numerous master planned housing developments, utility and road construction, and developed recreation. Future disturbances are quantified in **Table 4.19-3**. The cumulative disturbances (past, present, and reasonably foreseeable future disturbances) comprise 119,023 acres, or 93.6 percent of the CIA.

Under the Proposed Action or Action Alternatives, use of BMPs during construction, and prompt post-construction reclamation, assures that temporary soil disturbance would be of short duration and minor impact. The Project would create a minor potential for erosion due to construction grading and disturbance; and during long-term maintenance activities (e.g., due to vehicle usage of the access roads). The same can be said of all reasonably foreseeable projects in or adjacent to the CIA, individually and cumulatively, based on current regulatory requirements for storm water permitting. Therefore, only negligible to minor cumulative impacts related to erosion are anticipated. The most likely source of moderate to severe impacts to soils in the CIA is from wildfires, abandoned mines, and unrestricted use of OHVs.

Under Action Alternatives 1 or 2, a multiuse utility corridor (requiring an RMPA) would be designated on BLM-managed public lands. This corridor would provide for additional utility development that could contribute to soil disturbance. However, any future proposal would be subject to federal and state regulations pertaining to surface disturbance and storm water permitting.

4.19.13 Transportation and Traffic

The CIA for transportation includes existing regional highways SR 74, SR 303, and US 60 (**no figure**). The existing transportation system in the CIA includes these highways, as well as local arterial and collector roads, the BNSF railroad, and six airports or airstrips (**Section 3.12**). Past and present land uses in the CIA have impacted transportation. Residential, industrial, and commercial development, as well as recreational use, have added traffic to existing roadways and increased the need for additional roads.

MAG models future transportation patterns throughout Maricopa County based on current traffic conditions and anticipated future growth. The projected ADT for identified regional highways in the CIA is listed in **Table 4.19-6.**

Table 4.19-6 Regional Highways Annual Average Daily Traffic within the CIA

ROADWAY	SEGMENT	EXISTING LANES (1)	2031 PROJECTED AVERAGE DAILY TRIPS (6) (# VEHICLES)
SR 74	East of US 60	2(2)	20,600
	West of Castle Hot Springs Rd.		25,800
	Between Castle Hot Springs Rd and New River Road		29,000
	Between New River Road and I-17		26,800
SR 303	East of US 60	4(3)	75,600
	Between Lake Pleasant Parkway and I-17		73,000
US 60	Between Dove Valley Road and 163rd Avenue	4-6(4)	49,300
	Between 163rd Avenue and SR 303		70,600
	South of SR 303		60,300

(1) Through lanes only. Does not include auxiliary lanes, on-ramps or off-ramps.
(2) ROW preservation is planned to accommodate a 10-Lane facility.
(3) SR 303 will be expanded to a 6-lane facility.
(4) US 60 reduces from 6 to 4-lanes North of SR 303.
(5) Existing ADT – Counts range in years from 2005 to 2011. Source: MAG
(6) MAG 2031 traffic forecast.

Reasonably foreseeable projects and activities include residential development, utility projects, and roadway/highway construction. These activities would increase traffic volume on the majority of roads in the CIA.

Since the majority of the CIA is projected to experience a significant increase in population in the future, several transportation studies have been completed that have evaluated the transportation systems needs to accommodate the anticipated growth. The Interstate 10/ Hassayampa Valley Transportation Framework Study was completed by MAG in 2008. This study identified a transportation system that includes arterials, Arizona parkways, and the future Interstate 11 (I-11). Several Arizona Parkways identified in the MAG study are planned or are under study in the Project Study Area. The transportation framework identified in the MAG I-10/Hassayampa Valley Transportation Framework Study was accepted by the MAG Regional Council and is included in the MAG RTP. Many of the unimproved dirt and two lane roads are identified for future expansion based on the level of future residential and commercial development in the area.

Local arterial and collector roads in the CIA are a combination of dirt and paved with primary access coming from regional highways, including US 60, SR 74, SR 303 and I 17. The majority of the local arterial and collector roads in the CIA, specifically north and south of SR 74 are either unimproved dirt or consist of only two lanes. Many of these roads are identified for future expansion based on the level of future residential and commercial development in the area. Future transportation projects identified and funded through the MAG Regional Transportation Plan (RTP) Arterial Life Cycle Program include capacity and intersection improvements along Sun Valley Parkway, Lake Pleasant Parkway, and Happy Valley Road.

The largest expected increase in traffic throughout the CIA is located along US 60 and SR 74 and is due to planned future development in the area. Plans for future development in the area are discussed in Land Use (**Sections 3.6** and **4.19.7**). Future regional highway projects are identified in the MAG RTP for US 60, SR 74, and SR 303. The BLM has established a Transportation Corridor in the Bradshaw-Harquahala RMP along SR 74 (**Figure 3.12-1**) for future highway projects. Funded projects located throughout the CIA include:

- US 60 – Planned projects along US 60 throughout the CIA include widening efforts to expand the roadway in the vicinity of SR 303 from four general purpose lanes to six. These improvements are identified in Phase III of the MAG RTP (FY2016 – 2020).
- SR 303 - The SR 303 corridor will be continuously developed as a new freeway facility throughout the CIA. SR 303 will eventually include three general purpose lanes in each direction. New highway construction and capacity improvements in the CIA are identified in the MAG RTP Phase II, III, IV, and V.

In January 2010, ADOT prepared a final feasibility report (ADOT 2011) for SR 74 ROW preservation. The purpose of this project is to establish a design concept and footprint for the future expansion of SR 74 to a controlled access freeway. This early planning would enable ROW and access control to be preserved and provide a basis for guiding future development along the corridor. The recommended alternative for the ultimate SR 74 concept would include:

- Ten general purpose lane rural controlled access facility with a 60-foot wide open median.

- From MP 0.5 to MP 11.5 and MP 18.2 to MP 21.7 (mileposts shown on **Figure 4.19-2**), 3 new lanes would be added to the south side of the existing SR 74 roadway, for a total of five new west bound lanes. Five new eastbound lanes would be added south of the new west bound lanes. The two construction centerlines would be separated by 144 feet.
- From MP 0.5 to MP 11.5 and MP 18.2 to MP 21.7, 200 feet of additional ROW would be required to the south of the existing 200-foot ROW with a few exceptions where additional ROW would be required to accommodate the cut and fill slopes.
- From MP 11.5 to MP 18.2, the new west bound SR 74 construction centerline would be realigned 24 feet to the north of the existing SR 74 construction centerline. The new east and west bound construction centerlines continue to be separated by approximately 144 feet. This realignment would require approximately 225 feet of additional ROW north of the existing SR 74 ROW with a few exceptions and approximately 50 feet of additional ROW south of the existing SR 74 ROW. The realignment of SR 74 is necessary to utilize the proposed 1,000-foot BLM Transportation Corridor within these MP limits as defined in the BLM Bradshaw-Harquahala RMP (BLM 2010). Utilizing this corridor would result in substantially less ROW from the private parcels south of SR 74 in this area.

When planning future projects in the designated SR 74 transportation corridor, coordination with the ADOT and the MAG is critical in order to preserve the future ROW requirements for the SR 74 expansion, which will include frontage roads, and interchanges.

There is one future BNSF facility planned to be located within the CIA in Surprise. The future Surprise Logistics Center would be located near Dove Valley Road and US 60 and is expected to house a serving yard, a 200-acre auto center, and 350 acres of direct served uses, including manufacturing, warehousing, storage, and general industrial land uses (URS 2009). This development would increase traffic on local roads as well as traffic on the BNSF railroad.

A fourth major transportation corridor, I-11, was recently designated as part of a federal transportation bill and would extend from Phoenix to Las Vegas, Nevada. I-11 would include a 152-mile section west and south of Phoenix that interconnects Casa Grande to Wickenburg (MAG 2012).

Improvements throughout the CIA would consist of expanding the majority of arterial streets to four- and six-lane roadways (MAG 2010). These projects would increase capacity and reduce potential congestion due to reasonably foreseeable future development.

Cumulative impacts to existing traffic conditions could occur if the Project were constructed at the same time as any of the other projects considered in this analysis, particularly the SR 74 expansion, Sun Valley and Trilby Substations, or the numerous planned community projects. The timing of construction of the individual projects is difficult to predict. The

Project contributions to cumulative transportation impacts during construction would be minor. Following completion of construction activity, the Project would not contribute to cumulative transportation impacts; therefore, no long-term cumulative transportation and traffic impacts are expected.

Because the proposed transmission line ROW would be sighted along the northern boundary of the ACC-certificated route where the transmission line would be north of SR 74, the ROW for the transmission line would not conflict with the potential future ROW for the SR 74 expansion. Where the transmission line would be south of SR 74, it appears that it would be outside of the proposed SR 74 expansion areas. However, under the Proposed Action, the transmission line is proposed to cross SR 74 in two locations. This crossing is designed for the existing condition along SR 74, and not to accommodate future expansion proposals; therefore cumulative impacts to transportation may occur at the time of final design and construction of the potential SR 74 expansion.

4.19.14 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants

The CIA for vegetation resources is the Project's Action Alternatives with a two-mile buffer (**Figure 4.19-2**). Existing vegetation in undeveloped areas within the CIA generally consists of Sonora-Mojave creosotebush-white bursage desert scrub and Sonoran palo verde-mixed cacti desert scrub. Vegetation typical of residential or commercial properties is characterized by urban landscaping, both native and non-native species. The small amount of agricultural land in the CIA is characterized by crops, pastureland, or fallow fields. In the 127,189-acre CIA, the main vegetation types include Sonora-Mojave creosotebush-white bursage desert scrub, Sonoran palo verde-mixed cacti desert scrub, and urban landscape. Riparian forest/woodland occurs along the Agua Fria River in the CIA.

Past and present land uses have altered the extent and composition of native vegetation communities in the CIA. Commercial and residential developments include clearing of vegetation and subsequent planting of urban vegetation species which may include both native and non-native species. Undeveloped lands generally retain their native vegetation communities with some noxious and invasive weed species taking root. Grazing has also affected native vegetation and the spread of noxious and invasive species.

The Project would have a long-term disturbance of between 130 to 142 acres, depending on the Action Alternative selected. Other reasonably foreseeable projects in the CIA would result in the development of 79,357 acres of residential development, up to 756 acres associated with the SR 74 expansion, and associated electrical infrastructure. These developments would result in further changes to the vegetation communities in the CIA. Commercial and master planned communities development would convert more lands to structures with urban landscaping and pavement. Road construction and/or expansion would result in the initial removal and transformation of native vegetation to roadway with a mixture of native and urban vegetation restoration in the road ROWs. Reasonably foreseeable projects when combined with past and present developments and disturbances would represent 119,023 acres of surface disturbance within the CIA; this represents 93.6 percent of the CIA.

Construction of the Project under the Proposed Action or Alternatives would contribute to the removal of native vegetation in the CIA, further reducing vegetation cover. This would represent less than 0.1 percent of the CIA. This effect when combined with past, present, and reasonably foreseeable projects would constitute only a negligible amount to the moderate to major cumulative impact on native vegetation resources within the CIA.

Development of a multiuse utility corridor (requiring an RMPA) under Action Alternative 1 or Alternative 2, on public lands would provide for additional development on those lands, however future developments would be subject to NEPA and their specific impacts would be addressed.

4.19.15 Visual Resources

The CIA for visual resources is a five-mile buffer surrounding the Project's Action Alternatives (**Figure 4.19-5**). The types of past and present disturbances that may affect visual resources in the CIA include road construction, agricultural activities, master planned communities/residential housing development, energy development, utility corridors, and mining activity. Specific projects and disturbances that have affected visual resources are described in **Appendix 4B**.

Reasonably foreseeable future projects and activities within the CIA include numerous planned community developments, a fiber optic project, the Sun Valley Substation, Trilby Substation, the Sun Valley to Trilby 230kV Transmission Line, and the SR 74, US 60, and Loop 303 highway expansions.

The combined Project and the SR 74 expansion would be visible from surrounding lands within the CIA, including BLM recreational areas (Castle Hot Springs SRMA, Hieroglyphic Mountains Special Management Area, Lake Pleasant HMA). To the extent that distant views of the surrounding landscape are a valuable component of recreational use of the CIA, diminishment of this character could be considered a potentially minor to major cumulative impact. At greater distances (four to five miles or more away) the Project structures in and of themselves combined with the SR 74 expansion would not substantially change the character of views from these areas due to the tendency of the structures to blend with the surrounding desert landscape when viewed from a distance and from a viewer superior position.

Construction and operation of the Project would contribute to the development of the CIA and the continued alteration of the landscape. Population growth in the CIA and the region is expected to continue which increases the amount of infrastructure needed to support these communities. As the population increases, the undeveloped character of the CIA would continue to shift from undeveloped open desert and native vegetation to urban structures and altered landscape. The Project would have a minor, but permanent, contribution to this cumulative change. Cumulative impacts from past, present, and reasonably foreseeable future activities to visual resources would be major.

4.19.15.1 Visual Resources Focus Area

Within the visual resources focus area (defined in **Section 4.14**), there would be major modifications to the visual resources of the area based on the reasonably foreseeable projects that are planned for the area. The cumulative effect to this area would be the impact of the

Project combined with other proposed developments, as viewed by a new group of sensitive viewers – residents of the new developments - that would be in the area as a result of the proposed developments, along with existing sensitive viewers.

As described previously, there are plans for acquisition and preservation of additional future ROW along SR 74 for a potential 10-lane freeway (URS 2010). This acquisition is scheduled between fiscal years 2026 – 2031.

In December 2011, the Saddleback Heights Specific Area Plan was amended; these changes postdate the data available to create **Figure 3.6-2**, Future Land Use. The amended plan indicates that the decision to plan for widening of SR 74 to 10 lanes partially drove the Saddleback Heights Specific Area Plan amendment. The amended plan envisions at least one interchange on the widened SR 74 providing access to the Saddleback Heights development. According to the plan amendment, the changes in SR 74 provide a unique opportunity for a 220-acre employment village near the intersection. Under the amended plan, the frontage along SR 74 east of the westernmost crossing would be developed to include a mixed use business park (employment center), an area identified as community commercial (town center), varying densities of residential development, and, to a much lesser extent, open space. Just south of the business park would be an area of community commercial development, and south of that is an area identified as resort overlay. An area of mixed use would be developed west of the westernmost SR 74 crossing for the Project.

The mixed use business park area is planned to include offices, research and development, light manufacturing, hotels, and eating establishments. The community commercial area is intended to provide for neighborhood shopping needs, employment, and entertainment needs. The resort overlay is planned to include time shares, a resort hotel, and supporting commercial services. The mixed use area west of the westernmost SR 74 crossing for the Project is envisioned to include residential, commercial, employment, and business park uses. In addition, the plan indicates that all residential land use categories may include limited commercial development, such as supermarkets, bakeries, drug stores, video stores, and restaurants, as appropriate (Diamond Ventures 2011).

The development of the Saddleback Heights residential community south of SR 74 would create a new group of sensitive viewers in the area. The plan emphasizes the natural views of the area that would be had by residents of the development, stating, “The subject property is characterized as “high” Arizona desert with sufficient topographical relief to provide virtually every potential homesite with a dramatic view of desert terrain, with one or more mountains of the Hieroglyphic Range as a backdrop.” This presentation of the visual resource presumes viewers would be looking from south to north, as the Hieroglyphic Mountains lie north of SR 74.

Given the plans outlined in the Saddleback Heights Amended Specific Area Plan, the majority of the SR 74 frontage within the Saddleback Heights development could be developed into business or commercial uses, as the most likely “appropriate” location for commercial services meeting residential community needs would be fronting the major transportation corridor. In addition, those business and commercial uses would extend south through the central part of the development. While one or more of the Hieroglyphic Mountains may be the view in the background, the foreground views of residents looking

north would be other residences and middle ground views would be business and commercial development.

The kinds of business and commercial development described in the plan would include vertical visual elements such as light poles in parking lots and signs. Given the numbers of people that would be associated with the development of employment, commercial, and residential uses, additional cell towers would be needed to support demand for communications. Finally, the plan is not of sufficient detail to specify building covenants that would govern the height of business, commercial, or residential structures, although this may be addressed by local zoning. Building design and height would also add vertical elements to landscape that is largely dominated by flat to undulating horizontal lines in the foreground to middle ground regions.

Under the Proposed Action, the transmission line would be located north of SR 74 directly north of the Saddleback Heights development, while under Alternative 2 the line would be directly south of SR 74 within the northern extent of the Saddleback Heights development. Comparing **Figures 4.14-6** and **4.14-21**, the areas where structures would be visible and the numbers of monopoles visible within the Saddleback Heights development would be very similar under the Proposed Action and Alternative 2. Under the Proposed Action, the monopoles would be further away from the residences than under Alternative 2, where they would be closer and would appear larger in the landscape relative to the surroundings.

However, intervening development between the new residential viewers and the transmission line would affect how it is perceived by residents looking to the north. Similar to the description in **Section 4.14**, in many cases topography would limit the visibility of the structures to some portion including the top. Intervening development in the foreground and middle ground would have the same effect – residents would see the upper portion of the structures above other developments, such as buildings. In some cases those developments may block a portion of the view of the transmission line, but from any point, a portion of it would be visible.

In general, development changes the context in which the transmission line is viewed as compared to viewing it in a relatively natural environment; the transmission line would tend to blend with other development. The structures would repeat the other vertical elements in the foreground and middle ground of the landscape, such as light poles, cell towers, or the vertical lines of buildings, which would reduce the contrast of the transmission line with its surroundings. Under the Proposed Action, the structures would be further away, north of SR 74, and would appear smaller in the landscape, against a backdrop of the Hieroglyphic Mountains, as viewed by the new group of sensitive viewers within Saddleback Heights. The appearance of the structures would vary with lighting conditions, but in general the land form as a back drop would minimize contrast.

Under Alternative 2, when the structures would be on the south side of SR 74, they would appear larger in the landscape than under the Proposed Action. Within an estimated 800 feet of the transmission line the structures would dominate the views. However, beyond 800 feet, similar to the Proposed Action, the structures would repeat the other vertical elements in the foreground and middle ground of the landscape, which would reduce the contrast of the

transmission line with its surroundings; and would be against a backdrop of the Hieroglyphic Mountains, which would also minimize contrast.

Under the Proposed Action, when the transmission line would be north of SR 74, the transmission line would be in a natural setting. Development as viewed by travelers on SR 74 would be on both the north and south side of SR 74. There are no other anticipated developments north of SR 74 in the foreground and middle ground of the landscape, particularly on the BLM-managed public lands; therefore, the cumulative impact would be the same as the direct and indirect impacts described in **Section 4.14**. The transmission line would stand in contrast to its natural surroundings. Under Alternative 2, development, including the transmission line, would be concentrated south of SR 74. Viewers from SR 74 would be looking to the south at the transmission line with a backdrop of Saddleback Heights development as previously described in this section. The transmission line would repeat the other vertical elements in the foreground and middle ground of the landscape, which would reduce the contrast of the transmission line with its surroundings. The simple presence of development would affect the expectations of viewers along SR 74; people expect to see transmission and distribution infrastructure in developed settings, which would reduce its noticeability, as compared to the Proposed Action. Sensitive viewers on SR 74 looking north under SR 74 would have an uninterrupted natural view.

Another cumulative effect to the visual resources focus area would be the expansion of SR 74 from two to ten lanes. Within the area between the proposed easternmost and westernmost crossings of the Project, the majority of the expansion area is planned for north of SR 74 within the BLM-designated transportation corridor. In conjunction with the Proposed Action, the addition of multiple lanes of SR 74 would obliterate existing topography between SR 74 and the transmission line to the north. In some cases, this topography limits the number of structures or the amount of any one structure that can be seen from SR 74. Topography may be eliminated that had been used as mitigation for visual impacts through micro-siting. Therefore the cumulative effect of the SR 74 widening with the Proposed Action would be greater visibility of the Project by travelers on SR 74, as well as the portion of new sensitive viewers in Saddleback Heights that would be in closer proximity to SR 74. There would probably be little change in the views of new sensitive viewers in the further southern reaches of Saddleback Heights as a result of the widening of SR 74.

The cumulative effects of the transmission line along with the Saddleback Heights development and the widening of SR 74 to recreationists in the SRMA would be similar under the Proposed Action and Alternative 2. Recreationists with southern views would be able to discern that the transmission line would be north of SR 74 under the Proposed Action versus south of SR 74 under Alternative 2; however those differences would be minimal. Viewers from the SRMA are higher in elevation than the Project and are looking down on the Project with land forms behind it. Under the Proposed Action, the expanded SR 74 would be behind the transmission line. Under Alternative 2 the Saddleback Heights development would be behind the transmission line. The transmission line would blend with either development. The combination of the SR 74 widening with the Saddleback Heights and other community developments to the south would have a major cumulative impact on visual resources as viewed by recreationists in the SRMA as the development would be extensive.

Under Alternative 1, the transportation corridor north and south of SR 74 would also be designated a multiuse utility corridor. Development of multiple utility lines in the corridor would contribute to cumulative impacts; however, the number of lines that could be developed in the corridor would be limited by ROW requirements for the planned SR 74 expansion. The presence of additional utility lines north of SR 74 would repeat the vertical and horizontal lines of the Project, and amplify the sense of development north of SR 74 for travelers on SR 74, and residents south of SR 74.

Under Alternative 3, the Project would dominate the views of residents within an estimated 800 feet of the line as it crosses or borders the Lake Pleasant Heights, Saddleback Heights, and Vistancia developments. Combined with the community developments, Alternative 3 would have similar cumulative visual impacts to the new group of sensitive viewers as Alternative 2, with a few notable differences. Regardless of whether residents would be north or south of the transmission line, they would be viewing the transmission line with community development in the foreground, middle ground, and background, which would place the transmission line in the context of urban development where people expect to see transmission and distribution lines, and therefore it would be less noticeable. At this distance and with development and topography, the widened SR 74 may not be visible, and if it is, viewers would likely see only overpasses, minimizing the contribution to cumulative impacts to visual resources. Travelers on SR 74 and within the SRMA looking south may be able to catch glimpses of the transmission line, depending on topography, but the view would be dominated by development minimizing the contribution of the transmission line to cumulative impacts to visual resources.

In summary, the totality of planned community development would have a major contribution to cumulative effects to visual resources as viewed by travelers on SR 74 and recreationists in the SRMA, and likely residents within the newly developed communities. The transmission line would blend with the vertical elements associated with development, and the development itself would reduce the noticeability of the transmission line under Alternatives 2 and 3, leaving natural views to the north of SR 74 largely intact. The Proposed Action would extend the sense of development north of SR 74, and the expansion of SR 74 within the transportation corridor to the north would likely remove topography, making the Project even more visible. Alternative 1 would intensify that sense of development north of SR 74 with the addition of multiple utility lines within a multiuse utility corridor.

4.19.16 Water Resources

There would be negligible if any affects to groundwater by the Proposed Action or Action Alternatives, as described in **Section 4.15**, thus the Project would not contribute cumulative impacts to groundwater resources. Therefore, no additional consideration of groundwater resources is included in this section.

Various types of land conversion including residential/community development, roads, agriculture, mines, range improvement projects, and other similar activities, as well as wildfires and grazing, have impacted surface water resources and wetlands in the CIA (**Table 4.19-4** and **Figure 4.19-2**). Some activities such as grazing and mining have changed over time to more resource-conscious management and extraction techniques which have lessened impacts and/or improved conditions.

4.19.16.1 Surface Water

The primary source of impacts to surface water resources is surface disturbance, which is directly affected by land use (**Appendix 4B**). Impacts can be to water quality or water quantity, which are interrelated in many cases. Types of development that might affect surface water resources would include residential development, energy development, road construction and maintenance, livestock grazing, agricultural activities, recreational trails/facilities, and mining activities. Point-source wastewater and storm drain discharges from urbanization and industrial development are regulated under NPDES permitting, which minimizes their impact on receiving surface water quality. Non-point storm water runoff from land uses such as transportation corridors and livestock grazing are less easily regulated and have the potential to affect surface water quality as well as the timing and volume of surface water flows. Events such as wildfires or failed culverts can have impacts on water quality.

Under the Proposed Action or Action Alternatives, cumulative effects to surface water resources in the surface water CIA would be negligible. Best management practices and storm water management during construction and operation would prevent any significant storm water runoff or wastewater from disturbed or hardscaped areas from reaching surface water features, groundwater, or wetlands. During operations of the Project, permitting requirements would ensure that water quality standards are met.

4.19.16.2 Wetlands

Under the Proposed Action or Action Alternatives, cumulative impacts to wetland resources in the CIA would be minor, if any. The past disturbance to wetlands has occurred primarily from conversion to urban landscapes, cropland, or similar activities. Although essentially non-existent, wetlands along the Action Alternative routes would be avoided by spanning.

4.19.17 Wildlife Resources, Including Special Status Wildlife and Migratory Birds

The CIA for wildlife resources is a two-mile buffer surrounding the Project which encompasses 127,189 acres (**Figure 4.19-2**). Lands in these CIAs include a mixture of undeveloped state, federal, and private lands, residential development, and lands utilized for mining, utilities, roads, agriculture, and other purposes. Sonora-Mojave creosotebush-white bursage desert scrub and Sonoran palo verde-mixed cacti desert scrub are the two dominant vegetation types within the CIA. Riparian areas and other vegetation communities also occur throughout the CIA in lesser amounts. This diversity in habitat types allows for many wildlife species to utilize the area. Types of wildlife species and their habitat found within the CIA would be very similar to those described in the affected environment for the Proposed Action, in **Section 3.16**.

Past and present actions in the wildlife CIA have likely resulted in both beneficial and negative impacts, at various levels, on wildlife. The primary impact to wildlife resources within the area has been habitat changes associated with past and present community development, grazing, and utility development (electric, water, gas, etc.). Negative impacts include loss of habitat, displacement, and fragmentation as a result of grazing, utility

developments, roads, community development, agriculture, recreation, and mining activity. Other impacts include noise disturbance/displacement to wildlife inhabiting areas within the CIA.

Past impacts to smaller less mobile wildlife species from direct crushing and mortality by livestock, large wild ungulates, and vehicles has likely also occurred within the CIA. In addition, grazing can contribute to impacts by increasing competition for forage, facilitating the spread of noxious and non-native, invasive weeds, changing the structure or composition of native plant communities, and degrading water quality and bank stability. Conditions in some wildlife habitat could be improved through revised grazing allotment management.

While the Project and other reasonably foreseeable future projects requiring federal and state permits and approvals would be permitted in a manner that minimizes impacts to important habitats, private projects may not have this oversight.

Specifically, planned community development would have large adverse effects on wildlife resources. Ultimately, approximately 82,403 acres of disturbance would result from community development, thus reducing habitat and forage area. Any area within these developments planned for parks, open space, and multi-species habitat would provide habitat, enhancing habitability. While provisions for open space would preserve some wildlife habitat, these changes would likely result in shifts in the kinds and the population levels of wildlife found as the ecosystem of the immediate area would be permanently altered and differ from the native ecosystem.

Another result of the community development would be increased traffic on roadways, including SR 74. Increased traffic in this area surrounded by public lands managed for wildlife values would likely result in increased collisions between wildlife and vehicles, increasing mortality.

Increased population in the CIA would likely increase recreational pressure on surrounding public lands. Increased human activity, hunting, and potential increased poaching would all lead to impacts to wildlife.

Overhead power lines and other underground utilities would result in permanent long-term impacts to wildlife through placement of structures for such facilities, creating perches as well as hazards for birds of prey, and construction of temporary maintenance roads that fragment habitat. Roadway and highway construction and expansion would result in loss of wildlife habitat and habitat fragmentation.

The introduction of a new transmission line increases the likelihood of avian wildlife and waterfowl experiencing in-flight collisions with structures and lines. Development of a multiuse utility corridor (requiring an RMPA) under Alternative 1 or 2 could increase the number of linear facility structures, increasing the potential incidence of collision. In areas where high-density migration takes place across the utility corridors, including design features intended to reduce collisions by making structures more visible to avian wildlife and waterfowl would be considered. Transmission structures would be designed to reduce electrocutions, roosting, perching, and nesting to the extent practicable. These measures would mitigate most adverse effects.

The general wildlife resources CIA totals 127,189 acres. Within this CIA, known quantifiable past and present disturbances total 11,390 acres (9.7 percent). Proposed future disturbances, including the Project, would potentially disturb another 107,633 acres. When combined with past, present, and reasonably foreseeable developments/disturbances this would total 119,023 acres or 93.6 percent of the CIA.

Overall, the Project would make a very small contribution to the total past, present, and reasonably foreseeable future disturbance in the CIA. While many cumulative impacts to wildlife are foreseeable, the addition of the Project itself would not be the cause of a significant degradation of wildlife resources or affect the potential for wildlife resources, including special status species, to sustain current population levels. The Project does not make a large enough contribution to the cumulative effects occurring or anticipated to occur to wildlife resources within the CIA due to its relatively short duration and generally minor effects (i.e., limited to individuals in a localized area), although the reasonably foreseeable developments/disturbances would have a large impact within the CIA.

This page intentionally left blank.

TABLE OF CONTENTS

CHAPTER 5 CONSULTATION AND COORDINATION 5-1

5.1 Introduction 5-1
5.2 Public Involvement 5-1
5.2.1 Public Scoping Period 5-1
5.2.2 Scoping Meetings 5-3
5.2.3 Scoping Responses 5-5
5.2.3.1 Scoping Period 5-5
5.2.3.2 Comment by Issue 5-5
5.2.3.3 Scoping Report 5-5
5.2.4 Project Status/Update Newsletter 5-6
5.2.5 Draft EIS Distribution 5-6
5.3 Agency Coordination/Consulation 5-7
5.4 Tribal Consultation and Coordination 5-8
5.5 Distribution of the Final EIS 5-10
5.6 Record of Decision 5-10
5.7 List of Preparers and Reviewers 5-11
5.8 Third Party Contractor - JBR Environmental Consultants 5-12

LIST OF TABLES

Table 5.2-1 Scoping Legal Notice and News Release Distribution 5-1
Table 5.2-2 Formal Scoping Meeting Dates, Times, Locations, and Attendees 5-4
Table 5.2-3 Number of Scoping Comments Received by Source 5-5
Table 5.2-4 Number of Scoping Comments Received by Issue 5-5
Table 5.4-1 Native American Tribe/Tribal Organizations Consulted 5-9
Table 5.7-1 Interdisciplinary Team and Specialists 5-11
Table 5.8-1 Third Party Contractor – JBR Environmental Consultants 5-12

This page intentionally left blank.

CHAPTER 5 CONSULTATION AND COORDINATION

5.1 INTRODUCTION

CEQ regulations implementing NEPA require that federal agencies provide meaningful opportunities for the public and stakeholders to provide input and identify their concerns with regard to the EIS process. Federal laws, such as the ESA, the CWA, and the NHPA, mandate public involvement and consultation with agencies or federally recognized tribal governments.

This chapter documents the specific consultation and coordination efforts undertaken by the BLM throughout the entire process of developing this Final EIS. A complete list of agencies and individuals who received the Draft EIS can be found in the complete Project Record, located at the BLM Phoenix District Office.

5.2 PUBLIC INVOLVEMENT

The BLM has taken a variety of steps to inform the public; special interest groups; and local, state, and federal agencies about the Proposed Action and alternatives for this Project, and to solicit feedback from these interested parties to help share the scope and alternatives of this Project. The following sections summarize BLM's efforts taken to consult and coordinate with all interested persons, agencies, tribes, and organizations.

5.2.1 Public Scoping Period

The public was provided a 45-day scoping period at the beginning of this Project and the EIS process to identify potential issues and concerns associated with the Proposed Action. As part of NEPA requirements, a NOI to prepare the EIS was posted for public inspection on the *Federal Register* website on April 8, 2011, and published in the *Federal Register* on April 11, 2011.

A legal notice for the Project was published in local newspapers and a news release was sent to media outlets as described in **Table 5.2-1**.

Table 5.2-1 Scoping Legal Notice and News Release Distribution

SCOPING LEGAL NOTICE AND NEWS RELEASE DISTRIBUTION
NEWSPAPER ANNOUNCEMENTS
Newspaper display announcements were placed in the Arizona Republic, state wide coverage, on April 12, 2011.
Newspaper display announcements were placed in the Arizona Republic, NW Valley zones 1 and 20 on April 13, 15, 16, 20, 22, and 23, 2011.
Newspaper display announcements were placed in the Arizona Republic, Peoria zone 2, on April 13, 15, 16, 20, 22, 23, and 27, 2011.

Table 5.2-1 Scoping Legal Notice and News Release Distribution (Continued)

SCOPING LEGAL NOTICE AND NEWS RELEASE DISTRIBUTION
NEWSPAPER ANNOUNCEMENTS
Newspaper display announcements were placed in the Arizona Republic, Glendale zone 9, on April 13, 15, 16, 20, 22, and 23, 2011.
Newspaper display announcements were placed in the Arizona Republic, North Phoenix zone 21, on April 13, 15, 16, 20, 22, and 23, 2011.
Newspaper display announcements were placed in the Peoria Times on April 15 and 22, 2011.
Newspaper display advertisements were place in the Sonoran News on April 13 and 27, 2011.
Newspaper display announcements were placed in the Surprise Today on April 13, 20, and 27, 2011.
Newspaper display announcements were placed in the West Valley View on April 12, 15, 19, and 22, 2011.
Newspaper display announcements were placed in The Wickenburg Sun on April 13 and 20, 2011.
MEDIA NOTICES AND OTHER ANOUNCEMENTS
A news release was posted April 12, 2011, on the BLM website.
A news release was issued by the City of Peoria on April 19, 2011.
Email notifications were sent to agencies, government officials, special interest groups, and other interested parties on April 14 and 25 and May 24 and 26, 2011.
A project information hotline was launched on April 7, 2011, and updated on May 3 and 19, 2011.
Meeting information was posted on the BLM's website: http://www.blm.gov/az/st/en/prog/energy/aps-sunvalley.html on April 12, 2011.
LETTERS AND POSTCARD INVITATIONS
A total of 538 invitational letters were mailed April 12, 2011, to a mailing list comprising of government agencies, elected officials, tribes, special interest groups, individuals who commented during the ACC process, mining claimants, and other interested parties.
A postcard was mailed the week of April 12, 2011, to the same mailing list as well as 12,002 interested parties and members of the public identified based on mail carrier routes within the parameters of the Project Study Area.

Table 5.2-1 Scoping Legal Notice and News Release Distribution (Continued)

SCOPING LEGAL NOTICE AND NEWS RELEASE DISTRIBUTION
NEIGHBORHOOD OUTREACH AND FLYERS
On April 14 and 18, 2011, staff from BLM's administrative contractors, Galileo Project, visited various community outlets, such as community centers, libraries, grocery stores, city offices, and recreational outlets in Surprise, Peoria, Circle City, Wittmann, Buckeye, and other areas along the Project route, to distribute 400 flyers announcing the public meetings and to encourage attendance.
ANNOUNCING OF FORMAL PUBLIC AND AGENCY MEETINGS
Staff from Galileo Project posted 12, 18-by-24-inch signs at locations within the Project Area.
Announcement included rotating web tile with link to the BLM website, which ran April 11-30, 2011. Announcement included website announcement, which ran April 13-27, 2011. A table summarizing the locations and photographic documentation of the posted flyers and signs can be found in the Scoping Summary Report.

5.2.2 Scoping Meetings

A scoping letter was prepared and sent to a list of 538 interested individuals, agencies, and organizations. The BLM compiled the initial contact list by using contact lists from previous projects. The initial scoping mailing list is included in the Scoping Report (BLM 2011d).

Three public scoping meetings and one agency scoping meeting were held for the Project at locations around the State of Arizona, see **Table 5.2-2**.

All attendees of scoping meetings were asked to sign in and provide their contact information. Lists of individuals who signed attendance sheets at the public meetings are included in the Scoping Report (BLM 2011d). The public scoping meetings began each evening at 5:30 PM and continued until 8:00 PM. The presenting speakers at each venue were the same: Joe Incardine, BLM National Project Manager; Steve Cohn, BLM Hassayampa Field Manager; and Richard Stuhan, APS. The BLM representatives discussed the meeting structure, how comments could be submitted, and provided an overview of the NEPA process. Mr. Stuhan presented a brief description and an overview of ~~the~~ APS' need for the proposed Project. BLM and APS personnel were available to answer questions from the public about the EIS analysis and Project, respectively, during an open house period both prior to and after the formal presentation.

Table 5.2-2 Formal Scoping Meeting Dates, Times, Locations, and Attendees

DATE	TIME	CITY, STATE	ADDRESS	ATTENDEES
PUBLIC SCOPING MEETINGS				
April 26, 2011	5:30-8:00 PM	Phoenix, Arizona	Ramada Plaza Phoenix Metrocenter 12027 N 28th Dr.	29
April 27, 2011	5:30-8:00 PM	Wittmann, Arizona	Nadaburg Elementary School 21419 W Dove Valley Road	66
April 28, 2011	5:30-8:00 PM	Peoria, Arizona	Peoria Community Center 8335 W Jefferson St.	249
ECONOMIC STRATEGIES WORKSHOP				
June 8, 2011	5:00-9:00 PM	Phoenix, Arizona	BLM National Training Center 9828 North 31st Avenue	55
AGENCY SCOPING MEETINGS				
April 26, 2011	2:00-4:00 PM	Phoenix, Arizona	Ramada Plaza Phoenix Metrocenter, 12027 N 28th Dr.	23

Attendees at the scoping meetings were provided with handouts describing the Project as well as the NEPA process. Comment forms were also provided to all attendees to facilitate submission of written scoping comments. The public was given the option to provide comments during the meeting, using regular mail, fax, or e-mail. In addition, information regarding the Project and the NEPA process was posted on the BLM's project website and on a toll-free telephonic information line.

In addition to the public scoping, on June 8, 2011, an Economic Strategies Workshop was conducted for this Project to comply with the BLM's Land Use Planning Handbook during the EIS and Land Use Plan Amendment process. The purpose of the workshop was to identify BLM management opportunities that further the social and economic goals of area communities. A complete summary of this process and the information presented at the Workshop is included in the Economic Strategies Workshop Summary (BLM 2011e), which is available online at http://www.blm.gov/az/st/en/prog/energy/aps-sunvalley.html.

5.2.3 Scoping Responses

5.2.3.1 Scoping Period

The official scoping period for the Sun Valley to Morgan Transmission Line Project occurred April 11 through May 27, 2011. However, the BLM continued to accept and consider written comments for inclusion in the scoping process until June 2011, and has continued to accept comments for general consideration in accordance with NEPA guidelines. **Tables 5.2-3** and **5.2-4** summarize the comments that were submitted to the BLM and were included in the scoping process.

Table 5.2-3 Number of Scoping Comments Received by Source

SOURCE	COMMENTS RECEIVED
Scoping meeting submittals	86
Mailed comment form/letter	138
Electronic submittal	65
TOTAL	**289**

5.2.3.2 Comments by Issue

Table 5.2-4 Number of Scoping Comments Received by Issue

ISSUE CATEGORY	NUMBER OF ISSUES IDENTIFIED BY CATEGORY
Air and Climate	1
Biology	93
Health and Safety	103
Mitigation and Alternatives	27
Need and Reliability	6
Process and RMPA	61
Recreation	11
Socioeconomic Values	As follows:
Property values	101
Environmental justice	1
Quality of life	5
General community	28
Scenic/Visual	103
Transportation and Traffic	52
Unclassifiable (general comments – non substantive)	343
TOTAL	**935**

5.2.3.3 Scoping Report

A detailed description of the scoping process, scoping comment analysis, and preliminary issues, concerns, and opportunities is contained in the Scoping Report (BLM 2011d). The

Scoping Report is available online at http://www.blm.gov/az/st/en/prog/energy/aps-sunvalley.html.

5.2.4 Project Status/Update Newsletter

Newsletters that provided a project status/update were mailed to 37,085 addresses on February 27, 2012. The boundary for the delivery area included all of the APS customers and owners of undeveloped land located within the study boundary for the Project as identified through a search of the Maricopa County Tax Assessors online records. The newsletter was also sent to all parties on the BLM mailing list including 94 agency representatives, 129 government representatives, 69 special interest groups, 8 BLM special recreation permit holders, 18 tribal representatives, 14 interested parties, 214 parties who previously commented on the ACC siting process, 346 parties who submitted scoping comments, and 19 parties who intervened in the ACC siting process.

5.2.5 Draft EIS Distribution

The Draft EIS review period was initiated by publication of the NOA in the *Federal Register* on November 9, 2012 with the 90-day comment period ending February 8, 2013. The Draft EIS was distributed as follows:

- A NOA was published in the *Federal Register* specifying dates for the comment period and the date, time, and location of the public comment meetings.
- A news release was provided by the BLM at the beginning of the comment period on the Draft EIS. The news release was submitted to the same news organizations as for the initial public scoping announcement.

There were a total of 1,005 contacts on the Project mailing list. Post cards were sent to everyone on the Project mailing list to determine which contacts were interested in receiving the Draft EIS.

- A total of 131 CDs and/or hardcopies of the Draft EIS were distributed to interested parties identified in the EIS mailing list.
- Copies of the Draft EIS were made available for review at local libraries as well as the BLM's Arizona State Office, the Phoenix District Office, and the Hassayampa Field Office.
- The Draft EIS was made available via the Project website at http://www.blm.gov/az/st/en/prog/energy/aps-sunvalley.html.

Three public hearings were held as follows:

Peoria, Arizona	December 11, 2012
Wittmann, Arizona	December 12, 2012
Phoenix, Arizona	December 13, 2012

The hearings began each evening at 6:00 PM and continued until 8:00 PM. Each public hearing opened with an open-house style arrangement, where attendees could view Project maps and other Project information. Joe Incardine, BLM, and Richard Stuhan, APS, as well

as other BLM and APS personnel, were available to answer questions from the public about the EIS analysis and proposed Project, respectively. During the public hearing portion of the meetings, the BLM provided a brief project overview prior to hearing oral comments. A court reporter was present during the public hearing portion of the meeting, who recorded the BLM's presentation as well as all oral comments made by the public. Public comment forms were available for attendees to provide written comments. All attendees of meetings were asked to sign in and provide their contact information. Lists of individuals who signed attendance sheets at the public meetings were added to the mailing list and are included in the Project Record.

5.3 AGENCY COORDINATION/CONSULATION

A total of 33 agencies were sent a letter inviting them to participate as a cooperating agency. They are as follows:

- Arizona Corporation Commission
- Arizona Department of Agriculture
- Arizona Department of Environmental Quality
- Arizona Department of Transportation
- Arizona Department of Water Resources
- Arizona Game and Fish Department
- Arizona State Land Department
- Bureau of Reclamation
- Central Arizona Water Conservation District
- City of Glendale
- City of Peoria
- City of Phoenix
- City of Surprise
- Department of Energy, Energy Efficiency & Renewable Energy
- Federal Aviation Administration, Pacific Region
- Federal Highway Administration, Arizona Division
- Maricopa Association of Governments
- Maricopa County Air Quality Department
- Maricopa County Board of Supervisors
- Maricopa County Department of Transportation
- Maricopa County Flood Control District
- Maricopa County Parks and Recreation Department
- Maricopa County Planning and Development Department
- Town of Buckeye
- Town of Wickenburg
- U.S. Air Force - Luke Air Force Base
- U.S. Army Corps of Engineers, Los Angeles District
- U.S. Environmental Protection Agency, Region 9
- U.S. Fish and Wildlife Service, Arizona Ecological Services
- U.S. Geological Survey
- Western Area Power Administration (Western) – Desert Southwest Region
- Yavapai County

- Yavapai County Board of Supervisors

Six agencies have accepted to participate; the following federal, state, and local agencies have signed on and been consulted as Cooperating Agencies during preparation of the EIS:

- U.S. Air Force - Luke Air Force Base
- U.S. Environmental Protection Agency
- Arizona State Land Department
- Maricopa Association of Governments
- City of Peoria
- City of Surprise

5.4 TRIBAL CONSULTATION AND COORDINATION

The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. The BLM has a responsibility to consider and consult on potential effects to natural or cultural resources related to tribal treaty rights, traditional uses, and places of religious and cultural importance. BLM consults with tribes on a government-to-government basis pursuant to NEPA; Section 106 of NHPA; Executive Order 13175; and other laws and policies in accordance with BLM Manual 8120, *Tribal Consultation under Cultural Resource Authorities*. Although such consultations typically focus on Section 106 compliance and matters related to cultural resources, tribes are invited to comment on other issues of concern to their governments and communities.

In April 2011, the BLM contacted the following eight American Indian tribes (**Table 5.4-1**) to notify them of the Proposed Action and initiate formal consultation in preparation of the EIS: Gila River Indian Community, Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, Tohono O'odham Nation, Yavapai Prescott Tribe, Yavapai Apache Nation, Fort McDowell Yavapai Nation, and the Hopi Tribe.

Certified letters were sent to elected tribal leaders, with copies to tribal cultural resource staff, described the proposed Project and Draft RMPA, requested comments, offered the opportunity to meet, and described plans to conduct cultural resource inventories and to share the inventory results with tribes. Aside from requests to review inventory results, at that time tribes did not identify concerns related to specific places within the Study Area. Cultural resource inventories were completed in the spring of 2012. In June 2012, BLM sent correspondence to the tribes providing an update on the EIS process and a detailed summary of the cultural resource inventory results and National Register eligibility recommendations. In July 2012, BLM presented information with an opportunity for discussion at a meeting of the Four Southern Tribes Cultural Resources Group consisting of representatives of the Gila River, Salt River, Ak-Chin, and Tohono O'odham tribes.

BLM described efforts to coordinate with APS and the ASLD to design the Project to avoid impacts to sensitive prehistoric sites along the Agua Fria River near the Morgan Substation. On July 30, 2012, BLM provided the tribes with copies of the survey report for their review and comment. The Yavapai Prescott Tribe provided comments on the report. The Gila River Indian Community concurred with BLM's evaluations of National Register eligibility, but requested more information on the preferred alternative (which had not yet been identified)

in order to comment on the effects of the Project. The Hopi and other tribes also requested continuing consultations.

On November 14, 2012, certified letters were sent to the eight tribes regarding the availability of the Draft EIS and summarizing previous consultation and coordination with the tribes. This letter was also an invitation for the tribes to attend the public hearings to be held regarding the Draft EIS. No comment letters were received from any of the tribes regarding the Draft EIS.

In recognition of the special relationship with the United States government, the BLM will continue to consult with the appropriate tribal governments at an official, executive level (government-to-government) in accordance with the NHPA and other relevant legal authorities. The BLM will continue to provide opportunities for government officials of federally recognized American Indian tribes to comment on and participate in the preparation of the EIS and will consider comments, notify consulted tribes of final decisions, and inform them of how their comments were addressed in those decisions.

Table 5.4-1 Native American Tribe/Tribal Organizations Consulted

TRIBE OR GROUP	CONCERNS EXPRESSED
Gila River Indian Community	No specific comments, but have expressed concerns about effects to prehistoric sites in the area that are regarded as ancestral.
Salt River Pima-Maricopa Indian Community	No specific comments, but have expressed concerns about effects to prehistoric sites in the area that are regarded as ancestral.
Ak-Chin Indian Community	No comments; due to the Project location, defers any concerns to the Salt River Pima-Maricopa Indian Community Cultural Preservation Office.
Tohono O'odham Nation	Have expressed concerns about effects to prehistoric sites in the area that are regarded as ancestral. Email to BLM from the Tribal Historic Preservation Officer on April 12, 2011 expressing objection to a Draft RMPA.
Yavapai Prescott Tribe	No specific comments but have expressed concerns about effects to prehistoric sites in the area that are regarded as ancestral.
Yavapai Apache Nation	No specific comments, but have expressed concerns about effects to prehistoric sites in the area that are regarded as ancestral.
Fort McDowell Yavapai Nation	No specific comments, but have expressed concerns about effects to prehistoric sites in the area that are regarded as ancestral.
Hopi Tribe	Letters to BLM in April 2011 and June, August, and November 2012 expressing cultural affiliation with archaeological sites and considering all ancestral sites as traditional cultural properties. Support for avoidance of sites. Request for continuing consultation and if avoidance of sites is not possible, a copy of the proposed treatment plan.

BLM conducts formal Section 106 consultation with the SHPO concurrently with tribal consultations. BLM sent an initial consultation letter to inform the SHPO of the proposed undertaking in April 2011. The SHPO responded, acknowledging the BLM's role as lead agency and looking forward to reviewing the draft inventory report and results of tribal consultations. In July 2012, BLM provided the SHPO with the report and consulted on National Register eligibility determinations and effect pursuant to 36 CFR Part 800.4 and 36 CFR Part 800.5. SHPO concurred with the adequacy of the report and BLM's eligibility determinations.

5.5 DISTRIBUTION OF THE FINAL EIS

Pursuant to the CEQ regulations (40 CFR §1502.19), the BLM is circulating this Final EIS to 1) agencies having jurisdiction by law or special expertise with respect to any environmental impact involved and any appropriate federal, state, or local agency authorized to develop and enforce environmental standards; 2) the applicant; and 3) any agencies, organizations, or individuals requesting a copy of the document.

The Final EIS distribution list was developed from the Draft EIS mailing list and supplemented with any new contacts who indicated interest in receiving the Final EIS. A complete list of all recipients of the Draft and Final EISs can be found in the Project Record.

The Final EIS distribution was completed after consideration was given to comments received on the Draft EIS (see **Chapter 6**). A 30-day Final EIS availability period was initiated by publication of a NOA for the Final EIS in the *Federal Register*. The Final EIS was released as follows:

- NOA published in the *Federal Register*.
- Copies of the Final EIS sent to addresses on the updated mailing list and made available via the internet on the via the Project website at http://www.blm.gov/az/st/en/prog/energy/aps-sunvalley.html.
- Copies of the Final EIS made available for review at local libraries as well as the BLM's Arizona State Office, the Phoenix District Office, and the Hassayampa Field Office.
- A news release was issued to the same newspapers used for previous Project announcements.

5.6 RECORD OF DECISION

Following the 30-day availability period for the Final EIS and the 60-day Governor's Consistency Review period that run concurrently (required because of the RMPA) the BLM will prepare two RODs. Two separate decisions will be made, each requiring its own ROD: one decision regarding amendment of the Bradshaw-Harquahala RMP and one decision regarding the transmission line project ROW. The BLM RODs will be distributed to individuals and organizations identified on the updated Project mailing list and will also be available via the Project website. A NOA for the RODs will be published in the *Federal*

Register. A news release will be made to the same newspapers used for previous Project announcements.

5.7 LIST OF PREPARERS AND REVIEWERS

Lead Agency: BLM, Phoenix District Office

Cooperating Agency: Hassayampa Field Office

Interdisciplinary Team and Technical Specialists: See **Table 5.7-1** below.

Table 5.7-1 Interdisciplinary Team and Specialists

RESOURCE	TEAM MEMBER/SPECIALIST
BLM National Project Manager – Joe Incardine	
District Project Manager, BLM Phoenix Field Office – Kathleen Depukat	
Hassayampa Field Office Manager – Rem Hawes	
Air Quality Climate Change Water Resources	William Wells
Cultural Resources Paleontology	Connie Stone Bryan M. Lausten Matt Basham
Geology Minerals Soils	Jeff Garrett William Wells
Land Use	Mary Skordinsky Don Applegate
NEPA Compliance	Jackie Neckels Leah Baker
Range	Mary Skordinsky Don Applegate
Realty	Jim Andersen
Recreation and Special Designations	Mary Skordinsky Don Applegate
Recreation Transportation and Traffic	Tom Bickauskas
Public Health and Safety	Brian Achziger Dr. William Harris
Socioeconomics and Environmental Justice	Henry Eichman (USFS TEAMS) Delilah Jaworski (USFS TEAMS Michael Johnson
Soils	William Wells

Table 5.7-1 Interdisciplinary Team and Specialists (Continued)

RESOURCE	TEAM MEMBER/SPECIALIST
Vegetation Wildlife Including Special Status Wildlife and Migratory Birds	Kevin Grove Codey Carter
Visual Resources	John McCarty Don Applegate
RESOURCE	**GALILEO PROJECT**
Project Record Public Management	Ellen Carr Meredith Griffin

5.8 THIRD PARTY CONTRACTOR - JBR ENVIRONMENTAL CONSULTANTS

Table 5.8-1 Third Party Contractor – JBR Environmental Consultants

ROLE/RESOURCE	STAFF	EXPERIENCE
Project Manager Hazardous Materials and Hazardous and Solid Waste	Brian Buck, PG Salt Lake City	MS Geological Engineering BS Geology 35 Years Experience
Deputy Project Manager/Project Manager	Greg Brown Salt Lake City	BS Natural Resource Management 20 Years Experience
Assistant Project Manager Project Coordination, Document Control, Visual Resources	Schelle Davis Salt Lake City	BA Environmental Studies 7 Years Experience
Air Quality and Climate Change	Robert Arpino, PE Tempe Chris Johnson Boise	BS Chemical Engineering BA Communications Science 12 Years Experience BS Math and Earth Sciences (Meteorology) 28 Years Experience

Table 5.8-1 Third Party Contractor – JBR Environmental Consultants (Continued)

ROLE/RESOURCE	STAFF	EXPERIENCE
Cultural Resources and Paleontology	Jenni Prince-Mahoney Salt Lake City	BA Anthropology MC NEPA 19 Years Experience
Cumulative Impacts	Linda Matthews Salt Lake City Jenni Prince-Mahoney Salt Lake City	BS Environmental Studies 29 Years Experience BA Anthropology MC NEPA 19 Years Experience
Geology and Minerals	Jamey Sage Salt Lake City Doug Koza Denver	BS Geology 14 Years Experience BA Geology, MS Geology 34 Years Experience
Soils	Brian Boyd Reno	BS Range Resource and Wildland Soil Science 10 Years Experience
Land Use, Range, Recreation, Special Designations, Transportation and Traffic	Stephanie Lauer, CEM Missoula	MS Forestry/Watershed Management BS Geology 13 Years Experience
Public Health and Safety	Ed Handl, PE Butte	MS Chemical Engineering BS Chemical Engineering 39 Years Experience
Socioeconomics	Jan Stambro Univ. of Utah. Salt Lake City	MBA International Business BS Business Management and Finance 27 Years Experience
Environmental Justice	Jon Schulman, EIT Salt Lake City	MS Environmental Engineering MA Journalism BA English 17 Years Experience
Vegetation, Wildlife, including Special Status Wildlife and Migratory Birds	Eric Holt St. George Laura Arneson Salt Lake City	MS Wildlife Management BS Wildlife Resources 23 Years Experience MS Biology BA Biology 10 Years Experience

Table 5.8-1 Third Party Contractor – JBR Environmental Consultants (Continued)

ROLE/RESOURCE	STAFF	EXPERIENCE
Water Resources	Karla Knoop Salt Lake City	BS Watershed Sciences 26 Years Experience
GIS	Connie Pixton Salt Lake City	40 Years Experience
GIS	Nick Faust Salt Lake City	BS Geography 1 Year Experience
Administrative Support	Sue Terry Salt Lake City	Associates Secretary Sciences 26 Years Experience

TABLE OF CONTENTS

CHAPTER 6 DRAFT EIS COMMENTS AND RESPONSES 6-1

6.1 Introduction 6-1
6.2 Response to Comments 6-1

LIST OF TABLES

Table 6.2-1 Public Comments and BLM Response 6-5

LIST OF APPENDICES

APPENDIX 6A List of Interested Parties that Signed Form Letters

This page intentionally left blank.

CHAPTER 6 DRAFT EIS COMMENTS AND RESPONSES

6.1 INTRODUCTION

This chapter provides public comments received by the BLM in response to publication of the Draft EIS, and the BLM's responses to those comments. The information contained in this chapter did not exist in the Draft EIS. Underlining was used throughout this Final EIS to indicate where text revisions were made between the Draft and Final EIS; however, no underlining was used in Chapter 6 as the entire chapter would be underlined and difficult to read.

Public comments were sought on the Sun Valley to Morgan 500/230kV Transmission Line Project Draft EIS. The comment period commenced with the publication of the NOA in the *Federal Register* on November 9, 2012 and ended on February 8, 2013.

A total of 1,279 comment letters and emails were received. This included one special interest group form letter (i.e., email campaign) and five other email form letters originating from individual interested parties; and the oral comments presented at the Draft EIS Public Hearings. All comments on the Draft EIS that were received, were read, and given careful consideration, with necessary changes incorporated into this Final EIS. Each written comment or oral statement presented at the public hearings was analyzed and specific comments related to the analysis contained in the Draft EIS were extracted.

6.2 RESPONSE TO COMMENTS

In responding to comments, every effort was made to address all questions, concerns, and other points presented by the commenter. **Table 6.1-1** presents all of the specific comments that were received on the Draft EIS. It includes the comment letter number, commenter name, the specific comment, and the BLM's response to the comment. Information contained in comment letters that had no specific relevance to the analysis in the Draft EIS is not included in **Table 6.1-1**. In some cases, entire comment letters did not contain information relevant to the analysis; entries in **Table 6.1-1** for these letters indicate in the "Comment" column that the content was unrelated. The initial occurrence of form letters was considered for comments, with all subsequent copies referenced back to the initial occurrence. A list of interested parties participating in form letter campaigns is provided in **Appendix 6A**, which includes the individuals name and which form letter they submitted. Two petitions were also received; these are included in the Project Record.

Not all comments in **Table 6.1-1** resulted in text changes that appear in the Final EIS. The "Response" provided by BLM, in many cases, refers to information already contained in the Draft EIS, or provides an explanation and/or clarification as to why a text change to the document was not required.

The following is a list of comment type codes that were used to indicate each comments associated resource or concern.

AIR	Air Quality Concern
AR	Access Routes Concern
CE	Cumulative Effects concern
CUL	Cultural Resources Concern
EJ	Environmental Justice Concern
GEN	General Concern
GEO	Geology & Minerals Concern
GHG/CC	Greenhouse Gas/ Climate Change concern
INFO	Information Request
LAW	Legal Concern
LU	Land Use Concern
M&M	Mitigation and Monitoring Concern
NEPA	NEPA Concern
NOISE	Noise concern
OHV	Off Road Vehicle Recreation Concern
OPP ALT2/3	Opposes Alternative 2 and 3
OPP ALT3	Opposes Alternative 3
OPP ALTS	Opposes all alternatives
OPP FL	Opposes use of federal lands
OPP MUC	Opposes multi-use corridor south of SR74
OPP PA	Opposes Proposed Action/Preferred Alt
OPP RMPA	Opposes RMP Amendment
OPP SAR	Opposes Sub-alternative Route
OPP UR	Opposes Unidentified Route
OREC	Other Recreation Concern
PH	Public Hearing Concern
PH&S	Public Health & Safety Concern
PR ROW	Previous ROW
RAN	Range Concern
RENE	Renewable Energy Concern

RIP	Riparian Concern
RNA	Recommends a New Alternative
SAAA	Supports Another Action Alternative
SDA	Supports a Dismissed Alternative
SOC	Socioeconomics Concern
SOIL	Soils Concern
SR74	Supports route along SR74 without indicating which side (north or south)
SRMA	Special Recreation Mgmt Area Concern
SSS	Special Status Species Concern
SUP NA	Supports No Action
SUP PA	Supports Proposed Action/Preferred Alt
SUR	Supports Unidentified Route
TRAN	Transportation Concern
UC	Content unrelated to analysis
VEG	Vegetation Concern
VIS	Visual Resources Concern
WLF	Wildlife Concern
WTR	Water Concern

This page intentionally left blank.

Table 6.2-1 Public Comments and BLM Response

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Maricopa County Board of Supervisors	1.1	SUP PA	"We…support the Proposed Action in its Environmental Impact Study…the Proposed Action strikes the appropriate balance and sufficiently avoids Lake Pleasant Park and Castle Hot Springs Road…We believe that by selecting the Proposed Action as its Preferred Alternative, the BLM can simultaneously protect the interests of the County and its residents …, while also facilitating a transmission line that … is needed for electric reliability and renewable energy."	Statement of preference.
Maricopa County Board of Supervisors	1.2	REC	"…the route determined for the Sun Valley to Morgan line should attempt to minimize impacts to Lake Pleasant Regional Park, and in particular, the primary ingress and egress from the Lake, Castle Hot Springs Road."	The visual impacts to Lake Pleasant Regional Park and Castle Hot Springs Road are analyzed in Section 4.14. Alternative 3, described in Section 2.5.3, would place the transmission line along the Carefree Highway alignment and would minimize visual impacts to SR 74 and Castle Hot Springs Road.
Maricopa County Board of Supervisors	1.3	RENE	"Maricopa County…acknowledges the importance of renewable energy transmission by allowing above ground electric transmission lines for 69kV or greater along SR 74."	This information is stated and acknowledged in Section 3.14.1 of the EIS.
Maricopa County Board of Supervisors	1.4	VIS	"The actual placement of the transmission line, consistent with the Proposed Action and the ACC decision will allow visual impacts to be minimized and mitigated."	The statement is supported by analysis in the EIS in Section 4.14.
Thomas and Donna Huey	2.1	SR74	"We definitely support the placement of these lines along state route 74 and encourage the final selection of this route for the project."	Statement of preference.
John & Barbara O'Donnell	3.1	OPP PA	"We are writing you to express our opposition to moving the High Voltage power lines proposal to the north side of SR 74."	Statement of preference.
Braulio & Tania Santana	4.1	SUP PA	"In order to preserve the safety and property value of our community we as a Vistancia property owners support the Certificated Route (North of State Route 74) as the route to implement this project."	Statement of preference.
Bruce Brown	5.1	VIS	"…scenic drives within easy travel time of the greater Phx area become fewer and fewer…Now, the threat of power lines along one of the few easily accessed scenic drives from the city is proposed. This route has always been a treat,… a experience not easily found this close to the ever encroaching city."	The impact of the proposed transmission line on visual resources, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
Bruce Brown	5.2	RNA	"There already exists a corridor of power lines that follow Rte 303, to the south of Rte 74…move the lines to the south of Rte 74."	Section 1.2 of the EIS states, "The 500kV transmission line would increase the reliability of the electrical infrastructure in Arizona by providing another 500kV source to the Pinnacle Peak Substation. This would be in addition to the sources from the Northern Navajo and Four Corners generating stations that can be subject to system outages or wildfires along transmission lines. The co-located 230kV transmission line would serve future load that is expected to develop in currently undeveloped areas..."
Charlotte and Tom Wright	6.1	SUP PA	"We sincerely appreciate your efforts at locating the power lines north of State Route 74…"	Statement of preference.
Charlotte and Tom Wright	6.2	OPP ALT3	"…and not within the northern portion of the Vistancia community."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Donald and Mary Roberts	7.1	OPP PA	"I am writing to … express opposition to the Line Siting Committee's decision to place major utility lines along State Route 74."	Statement of preference.
Donald and Mary Roberts	7.2	VIS	"Any proposed High Voltage Utility towers would be highly detrimental to the pristine and environmentally sensitive lands along this designated Scenic Corridor."	The impact of the proposed transmission line on visual resources and the mitigation to minimize impacts, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
Donald and Mary Roberts	7.3	OREC	"Diamond Venture's Alternate Route 3 North …poses an even greater threat to the enjoyment of tens of thousands of people in the region who utilize the Federal BLM lands for recreational and travel purposes."	Impacts to recreation from the Proposed Action/Preferred Alternative on BLM lands are analyzed in Section 4.9. Mitigation measures to minimize impacts are also included in this section.
Donald and Mary Roberts	7.4	OPP RMPA	"The Bureau of Land Management has spent over 6 years revising the Resource Management Plan in this area to further restrict and protect its environment, sensitive habitat and recreational use. No utility lines were requested or identified during that process. The National Environmental Policy Act (NEPA) was enacted to help protect Federal lands that are owned by the Citizens of the United States from greedy self-interests. The BLM NEPA public process is certain to highlight and elevate the intense opposition to degradation of these environmentally-sensitive Federal Lands."	Environmental impacts of the Proposed Action/Preferred Alternative are analyzed in Chapter 4. Mitigation measures for various resources are also listed in Chapter 4 to minimize potential impacts. These measures are also summarized in Section 2.9. Because no utility corridors were envisioned in the area of the ACC certificated route on BLM lands north of SR 74, the BLM proposes to amend the RMP to establish a utility corridor, as described in Sections 1.3.2 and 2.4.
Donald and Mary Roberts	7.5	NEPA	"NEPA requires that other alternatives must be taken if they are viable."	The NEPA does not provide direction as to which alternatives may, or should be, selected and implemented. Section 1505.2, Record of Decision in Cases Requiring Environmental Impact Statements indicates that a record of decision shall, "Identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable. An agency shall identify and discuss all such factors including any essential considerations of national policy which were balanced by the agency in making its decision and state how those considerations entered into its decision."
Donald and Mary Roberts	7.6	LU	"The last few scenic, easily accessible, critical desert habitats in the entire region should not be compromised for the benefit of those few who would profit or benefit from this line siting at the expense of the general public."	Statement of opinion. Wildlife habitat within the project area is discussed in Sections 3.16 and 4.16.
Donald and Mary Roberts	7.7	VIS	"State Route 74 has both Scenic Corridor designation and BLM land on both sides of the road."	The impact of the proposed transmission line on visual resources and the mitigation to minimize impacts, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
Donald and Mary Roberts	7.8	GEN	"I am deeply concerned about this project destroying the pristine desert land that surrounds us."	Environmental impacts of the Proposed Action/Preferred Alternative to desert resources are analyzed in Chapter 4, along with a description of mitigation measures and other measures proposed to reduce potential impacts.
Donald and Mary Roberts	7.9	LU	"…Federal land that belongs to everyone…should be preserved for the future posterity of all our children and grandchildren."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Michael Jordan Marion Jordan	8.1	OPP PA	"…we do not approve any changes to the original plan for high power structures."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Michael Jordan Marion Jordan	8.2	VIS	"…this would create an unsightly appearance to the desert in front of our land…"	The impact of the proposed transmission line on visual resources and the mitigation to minimize impacts, and specifically the visual resources north of SR 74, is analyzed in Section 4.14.
Michael Jordan Marion Jordan	8.3	SAAA	"South of 74 was the best way to carry out the power lines since there is absolutely no homes or construction on that side."	Statement of preference.
Denise Lacey Senior Planner, Maricopa County Dept. of Transportation	9.1	TRAN	"…proposed transmission line is in close proximity to, adjacent to, or in line with planned roadways. Specifically these roadways include Dove Valley Road/Parkway, Wild Rose Parkway (243 & 251 Avenues), Sun Valley Parkway, Patton Road, and Deer Valley Parkway. All of these roadways will require 200 feet of right-of-way to accommodate future travel."	The interaction of the proposed project and planned future roadways is addressed in Section 4.19.13, which analyzes the cumulative impacts to transportation and traffic. Text has been added to this section addressing possible conflicts between the ROW for the proposed project and ROW requirements for future transportation infrastructure. The proposed transmission line has been located near the outside edge of the transportation corridor on the north side of SR 74 which would tend to minimize most potential conflicts with anticipated ROWs for future highway development.
Denise Lacey Senior Planner, Maricopa County Dept. of Transportation	9.2	TRAN	"MCDOT has previously expressed concerns regarding impact to future roadway widening due to utility conflicts and repeats that concern with this project."	The interaction of the proposed project and planned future roadways is addressed in Section 4.19.13, which analyzes the cumulative impacts to transportation and traffic. Text has been added to this section addressing possible conflicts between the ROW for the proposed project and ROW requirements for future transportation infrastructure. The proposed transmission line has been located near the outside edge of the transportation corridor on the north side of SR 74 which would tend to minimize most potential conflicts with anticipated ROWs for future highway development.
Denise Lacey Senior Planner, Maricopa County Dept. of Transportation	9.3	LU	"We encourage any approval to require equal cooperation in sharing right-of-way (roadway and utilities) thereby limiting impact to the environment by decreasing overall right-of-way requirements."	The ROW north of SR 74 would be within a BLM-designated transportation corridor.
Nancy Santori	10.1	OPP PA	"…the proposed route…is a pristine, beautiful area which I have enjoyed hiking in, and I don't want to see it spoiled by development of any kind."	Statement of preference.
Jim and Claudia Thomson	11.1	SUP PA	"We strongly agree with the conclusion pertaining to the preferred alignment north of State Route 74 as chosen by BLM."	Statement of preference.
Brent & Rose Dubberstein	12.1	SR74	"We only support alignment with (SR) 74."	Statement of preference.
Dan Gainor	13.1	SUP PA	"My wife and I are in total support of the proposed amendment and wish we could be at the public hearing to voice our support for the amended route."	Statement of preference.
Jerry and Theresa Moon	14.1	SUP PA	"We are in full support of the Certificated Route regarding the APS power line."	Statement of preference.
Robert Dreebin	15.1	INFO	"Where can I get a map of the proposed power line and where it goes?"	Dennis Godfrey replied with map location on 12.11.12.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Anonymous	16.1	PH	"It was extremely difficult and at times impossible to hear the speakers. It would have been nice to be able to hear all views since we took the time to come out this evening. Very disappointing. Very poor planning."	Technical difficulties were unexpected and unforeseen. All of the comments on the DEIS are included in the FEIS in Chapter 7.
Butch Pendergast	17.1	SUP PA	"I endorse the proposed route."	Statement of preference.
Diane Arnold	18.1	SOC	"Trilogy at Vistancia remained stable through the recession/financial crisis. Homeowners would be very offended should the power lines go through its community, and they could potentially move to other locations outside of Peoria."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10.
J.K. and Diane Arnold	19.1	SOC	"Power lines within view of Trilogy will not only greatly depreciate property values and tax revenue, but will alienate a very stable segment of Peoria residing in Vistancia."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue.
Kathleen Johnson	20.1	SR74	"We support the power line on State Route 74."	Statement of preference.
Mark Johnson	21.1	SR74	"Prefer power line go to Hwy 74 and not near Trilogy."	Statement of preference.
J. Richard Stravolo Marie L. Stravolo	22.1	OPP ALT3	"We voiced our objection to the original planned location of the transmission lines."	Statement of preference.
J. Richard Stravolo Marie L. Stravolo	22.2	PH&S	"Our concerns were with the potential health problems that could result from such close proximity to our residences…"	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7. Under Alternative 3, the proposed transmission line would be over one mile away from existing residences.
J. Richard Stravolo Marie L. Stravolo	22.3	SOC	"…and to the obvious decline in the fair market value of our homes."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values from Alternative 3.
J. Richard Stravolo Marie L. Stravolo	22.4	SUP PA	"We also understand that BLM has proposed that the route, in fact, be installed to the North of Route 74. We strongly approve of this location."	Statement of preference.
Sheila Sparr Rick Sparr	23.1	OPP ALT3	"We don't want any power lines in view of our Trilogy neighborhood."	Statement of preference.
Sheila Sparr Rick Sparr	23.2	SOC	"We don't want our property…to be depreciated…"	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values from Alternative 3.
Ron Aames	24.1	SUP PA	"I…strongly support the proposed APS Sun Valley to Morgan 500/230 kV transmission line project."	Statement of preference.
Suzanne Otterbacher	25.1	SR74	"We support lines along 74…"	Statement of preference.
Suzanne Otterbacher	25.2	SOC	"…so as to not disrupt the value of the homes in Trilogy which provide a major tax base for Peoria."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Theodore Manos Donna Doe	26.1	SUR	"Why not just run your power lines along existing power lines to the south!"	Section 2.7 identifies other utility corridors (specifically the West Wing in Section 2.7.7) and provides rationale for why those alternatives were not carried forward for detailed analysis.
Theodore Manos Donna Doe	26.2	LU	"Protect BLM land"	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Theodore Manos Donna Doe	26.3	OPP ALT3	"Avoid Route #3"	Statement of preference.
Donald Dolphin	27.1	OPP PA	"I do not see the need for an additional route which will destroy the view along St. Rt. 74…"	The impact of the proposed transmission line on visual resources and the mitigation to minimize impacts, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
Donald Dolphin	27.2	GEN	"I can't help but wonder if the real reason for this project is to provide power for the so-called 'Inland Port' that Santa Fe railroad is planning for Grand Ave and Dove Valley Road."	Section 1.2 of the EIS provides APS' objectives for the proposed project.
John Smejkel	28.1	OPP UR	"I do not approve! I have a problem with these towers literally in my back yard."	Statement of preference.
M. Milic	29.1	PH	"Gov't agency - no show - ie Luke, City of Surprise, Peoria"	Cooperating agencies were in attendance at various meetings and were appraised of the venues of all the meetings.
M. Milic	29.2	GEN	"Not plain where its going - street names - N & South & East & West need to be plain on mailings"	The comment referred to contents of mailings and not the EIS itself.
M. Milic	29.3	INFO	"Needs to be informed"	Project contact information was distributed at the public hearings as well as the project website.
M. Milic	29.4	SDA	"Bury the lines"	Section 2.7.10 explains why undergrounding the proposed transmission line was not carried forward for detailed analysis.
M. Milic	29.5	SOC	"Notify anyone show property value is affected"	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values. Neither the BLM nor APS could notify property owners of affects to valuation from the transmission line because effects are estimated for analysis purposes only and are not absolute; best available studies were reviewed and referenced in the EIS related to this issue.
M. Milic	29.6	INFO	"Phone #s & Email of who to contact to stop it"	Project contact information was distributed at the public hearings as well as the project website.
David G. Gulino, Land Development Services	30.1	INFO	"Please add me to the mailing list."	Added to the mailing list by Galileo on 12.13.12
The Pinalto Family	31.1	PH&S	"We live in the WestWing Mountain neighborhood in N. Peoria and are very concerned about the potential health risks that a nearby APS Sub-Station will cause. The location of proposed APS Sub-Station is too close to our neighborhood…"	Impacts from the construction of the Sun Valley Substation are beyond the scope of analysis for this EIS.
Constance and Donald McGuigan	33.1	SR74	"We only support alignment of the APS transmission lines with SR74."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Kathleen and Robert Enserro	46.1	OPP ALT3	"I live in Trilogy of Vistancia and do not [want] the power lines in our backyard or near vicinity."	Statement of preference.
Robert and Amanda Wahl	49.1	SUP PA	"We are writing to you today to state our support for placing the proposed APS Sun Valley to Morgan Transmission Line on the North side of SR 74."	Statement of preference.
Jacqueline Vogle Robert Vogle	53.1	SUP PA	"…we are urging you to consider placement of the APS power lines on the north side of SR74."	Statement of preference.
Jacqueline Vogle Robert Vogle	53.2	LU	"SR 74 is slated to become a major transportation corridor, it seems that utilizing this area as a transportation/utility corridor would minimize environmental impacts to the area."	The combined environmental impact of the Proposed Project with development of the transportation corridor is analyzed in Section 4.19 of the EIS.
Jacqueline Vogle Robert Vogle	53.3	LU	"Precedence has been established in placing power lines along transportation corridors such as Loop 303 and I-17."	The EIS already acknowledges that the stretch along SR 74 was designated as a transportation corridor in Section 1.1.2 Section 1.3.2 details BLM's purpose and need for the Project, including the need to amend the Bradshaw-Harquahala RMP to establish a utility corridor. The combined environmental impact of the Proposed Project with development of the transportation corridor is analyzed in Section 4.19 of the EIS.
Jacqueline Vogle Robert Vogle	53.4	SUP PA	"Placement of power lines along the north side of SR 74 is supported by Vistancia and Trilogy residents, City of Peoria officials and staff, Congressman Trent Franks, Congressman Ed Pastor, Congresswoman Gabrielle Giffords, Diamond Ventures, Arizona Governor Jan Brewer, Arizona Department of Transportation, Arizona State Land Department, Maricopa County and Maricopa Association of Governments, Cities of Surprise and Buckeye, Saddleback Heights and the Arizona Corporation Commission."	Statement of preference.
Jacqueline Vogle Robert Vogle	53.5	GEN	"APS stated they would agree to abide by the certified route as approved by the ACC."	Chapter 1 describes the ACC route in detail.
Jacqueline Vogle Robert Vogle	53.6	GEN	"The 'Proposed Action Plan' is fully supported by APS, local residents, city officials, Arizona Corporation Commissioners and congressional representatives who have all considered alternative routes and deem placement along the north side of SR 74 as the most logical location and on that will least affect families, pristine desert and wildlife."	Statement of preference.
Jacqueline Vogle Robert Vogle	53.7	PH&S	"…the most pressing and paramount reason to place the lines on the north side of SR74 is to protect current and future home owners south of SR 74 from potential health risks. The United States National Council on Radiation Protection states, 'There is a powerful body of impressive evidence showing that even low exposure to electromagnetic radiation has a long-term effect on health.' Some effects listed in the report include sudden infant death, childhood leukemia, changes in brain chemistry, impairment of the immune system and inhibition of melatonin production which suppresses certain cancers. Considering the 500kV lines are the most powerful in existence, this statement is quite alarming."	The effects of EMF are already analyzed for each alternative in Section 4.7.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Gene and Cheryl Sinkule John and Linda Foder Paul and Andrea Scheiner Michael and Natilie Heiger	54.1	SR74	"…we want to thank you for your hard work to resolve the placement of the transmission lines… for placement along Hwy 74."	Statement of preference.
Art and Sandy Osier	55.1	VIS	"Please do not ruin our view by placing power lines in the area."	The impact of the proposed transmission line on visual resources is analyzed in Section 4.14, along with proposed mitigation to minimize potential impacts. Figures and simulations in this section show the potential impacts to visual resources from various locations.
Art and Sandy Osier	55.2	SR74	"We only support SR74."	Statement of preference.
Larry and Laura Pawlowski	56.1	SUP PA	"…[we] support APS placing their Sun Valley to Morgan 500/230kV Transmission line along the north side of SR 74/Carefree Hwy."	Statement of preference.
Larry and Laura Pawlowski	56.2	OPP ALT3	"Please keep the power lines away from Vistancia!"	Statement of preference.
Laura Gainor	57.1	OPP ALT3	"I want to… thank BLM for… relocating the proposed route of this line away from Trilogy at Vistancia…"	Statement of preference.
Laura Gainor	57.2	SR74	" I want to… thank BLM for relocating the proposed route… along the Route 74."	Statement of preference.
Dan Gainor	58.1	OPP ALT3	"I want to… thank BLM for… relocating the proposed route of this line away from Trilogy at Vistancia…"	Statement of preference.
Dan Gainor	58.2	SR74	" I want to… thank BLM for relocating the proposed route… along the Route 74."	Statement of preference.
Mike Parkinson	61.1	SR74	"We only support alignment with (SR) 74…"	Statement of preference.
Mike Parkinson	61.2	OPP ALT3	"…and do not support any alignment in and around the Trilogy area."	Statement of preference.
Steve and Irene Groch	62.1	VIS	"We are very concerned about having large visible power transmission lines near our property."	The impact of the proposed transmission line on visual resources is analyzed in Section 4.14, along with proposed mitigation to minimize potential impacts. Figures and simulations in this section show the potential impacts to visual resources from various locations.
Steve and Irene Groch	62.2	SR74	"We only support alignment with (SR) 74."	Statement of preference.
Robert Dreebin	63.1	INFO	"Where can I get a map of the proposed power line and where it goes?"	Dennis Godfrey replied on 12.11.12 directing commenter to BLM website.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Mark and Marlene Zebrowski	64.1	SR74	"We only support alignment with (SR) 74."	Statement of preference.
Mark and Marlene Zebrowski	64.2	OPP ALT3	"Keep the power lines away from Trilogy…"	Statement of preference.
Mark and Marlene Zebrowski	64.3	GEN	"Why does this keep coming up?"	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Bryan and Patricia Stamp	67.1	OPP ALT3	"…we do not want high voltage transmission lines close to our existing homes."	Statement of preference.
Bryan and Patricia Stamp	67.2	SR74	"Please use the alternative plan to put them by SR 74 where it is undeveloped and a low density residential area."	Statement of preference.
Richard and Patricia Brown	73.1	SUP PA	"The proposed route for these power lines is the safest, is aesthetically superior, and has the least impact on property values."	Statement of preference.
Wayne Carney	74.1	SOC	"What would your stockholders think about you spending their investment on running the power line across #74 for several miles and then back across the road to satisfy a developer?"	The opinion of APS' stockholders regarding the value of the investment of the Proposed Action/Preferred Alternative is beyond the scope of the EIS analysis.
Wayne Carney	74.2	OPP PA	"…keep the line on the South side of the road."	Statement of preference.
Mr. and Mrs. James Berg	75.1	SR74	"We only support alignment with (SR) 74."	Statement of preference.
Mr. and Mrs. James Berg	75.2	OPP ALT3	"…we have moved to Trilogy because of it's beauty and healthy atmosphere. We hope to live out our days here and will feel extremely disappointed if the power lines are brought in to our area."	Statement of preference.
Mr. and Mrs. James Berg	75.3	PH&S	"With so much open land in the area, [we] do not understand why the lines must be places so near our homes, especially because of the potential health danger."	Potential impacts for EMF are thoroughly analyzed in Section 4.7.
Ron Harris	76.1	INFO	"I was told the presentation info would be available on the BLM website…just curious what the timing is on availability…"	Dennis Godfrey replied that hearing info will be available on 12.17.12. Data is on website.
Kathy Allen	77.1	SR74	"My husband, Dennis, and I only support alignment with (SR) 74."	Statement of preference.
Carol and Andy Rookwood	78.1	SUP PA	"We are so glad to hear that you have chosen the Certified Route as your preferred alternative for the power lines (north of State Route 74). We support that decision."	Statement of preference.
Walter "Skip" Zahlmann	79.1	PH	"…This … is totally unacceptable as when no local, state or federal representative showed up at the Wittman hearing…"	Cooperating agencies were in attendance at various meetings and were appraised of the venues of all the meetings.
Walter "Skip" Zahlmann	79.2	PH	"…the people and residents of Wittman were not notified properly…"	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project.
Walter "Skip" Zahlmann	79.3	PH	"…new and open hearings must be held so full disclosure regarding all aspects are made available to all concerned citizens."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlmann	79.4	INFO	"who exactly are the people within the BLM –who will make the final decisions----------I want the names and contact information"	Project contact information was distributed at the public hearings as well as the project website.
Walter "Skip" Zahlmann	79.5	PH	"who do we see and or contact about demanding a new hearing for the community of Wittman Arizona…. 4.] where do we send notice and a signed petition , and to whom, demanding additional hearings regarding the route through Wittman…"	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Walter "Skip" Zahlmann	79.6	INFO	"who are the representatives / congressman of Wittman Arizona who support –all the government representatives for Wittman----------local—State and federal.	Project contact information was distributed at the public hearings as well as the project website.
Walter "Skip" Zahlmann	79.7	SDA	"APS-was given literature that confirms the lines can be buried even for some long distances----when the community of Wittman was told not possible for technical reasons------simply not true"	Section 2.7.10 explains why Undergrounding the proposed transmission line was not carried forward for detailed analysis.
Walter "Skip" Zahlmann	79.8	SOC	" If one of the arguments made by Diamond Ventures and Sun Belt Holdings / Vistancia ------and they will be no closer than 2 miles----and you accepted this reasoning----------how can the BLM than justify placing some of these towers within less than 100 yards of people's homes in Wittman?"	The BLM decision on the proposed project would only apply to any BLM-managed public lands crossed by the proposed project and not land owned and managed by the Arizona State Land Department. The portion of the project that would affect people's homes in Wittmann would not be on BLM-managed public lands and was proposed by the Arizona State Land Department. Other comments regarding private property impacts have resulted in changes and additions to Chapter 1, Section 1.1.2, clarifying the decision process of the State leading up to the ACC-certificated route. BLM did not design the route and therefore can or cannot justify the decision-making process for the route.
Robert Dreebin	80.1	INFO	"Where can I get a map of the proposed power line and where it goes?"	Dennis Godfrey replied on 12.11.12 directing commenter to BLM website.
Micah Rasner	81.1	OPP SAR	"I just recently learned about your proposal to erect these huge lines down Cloud Road in Wittmann and am outraged."	Statement of preference.
Steve Speak	82.1	OPP PA	"I do not see placing an above ground powerline north of the highway a positive change…"	Statement of preference.
Steve Speak	82.2	VIS	"This is a prime travel way for people coming to Phoenix from Las Vegas and the powerline will totally destroy a tremendous scenic desert/mountain view these visitors will see."	The impact of the proposed transmission line on visual resources and the mitigation to minimize impacts, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
Steve Speak	82.3	OHV	"…the proposed powerline will result in the destruction of many miles of prime OHV single track trails in the Heiroglyphic Mountain OHV trail system. Specifically trails LP2, LP3 and LP1. These trails are an essential part of a loop trail system that was developed several years ago. Losing these trails not only results in the loss of the specific trail mileage but also destroys many more miles as these serve as integral parts of several trail loops. My family and many OHV friends use these trails almost every week so I do not want to see them destroyed."	Several comments regarding impacts to OHV trails north of SR 74 resulted in clarifications made in Section 4.9, analysis of impacts to recreation, including OHV recreation. Access to OHV routes would not be lost under the Proposed Action/Preferred Alternative. In addition, additional mitigation for impacts to recreation has been included in Section 4.9.3.
Steve Speak	82.4	OHV	"…I think it is essential that the destroyed trails be fully replaced by an equal mileage of similar trails with the full costs of any environmental studies and trail construction to be paid by APS. Additionally, I would request that this work be done in parallel with the powerline installation so there are not several years of lost trail access before the new trails are constructed and put into use."	Several comments regarding impacts to OHV trails north of SR 74 resulted in clarifications and additional information and analysis being made in Section 4.9, including OHV recreation. Access to OHV routes would not be lost under the Proposed Action/Preferred Alternative and single track trails would be protected. In addition, mitigation for impacts to recreation has been expanded in Section 4.9.3.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Barry Krayer	83.1	OPP PA	"I am upset that the BLM folded like a cheap suit under pressure from Diamond enterprises and a bunch of cry babies in Vistancia to site the power line north of Highway 74…"	Statement of preference.
Barry Krayer	83.2	OHV	"The power line will now destroy several miles of prime single track motorcycle trails that I have been riding for years (trails 1, 2, and 3). The least the BLM could do is make APS and Diamond pay to replace these popular trails somewhere at the Boulders OHV area."	See response to Comment ID No. 82.4 above. Single-track motorcycle trails would not be destroyed under the Proposed Action/Preferred Alternative. Single-track trails would not be allowed to be used for construction access. In addition, while the centerline access route along the transmission line would be designated an Administrative Route, single-track trails intersecting the centerline would be allowed to cross the centerline access.
Thomas and Connie Kostelnik	85.1	SUP PA	"My wife and I are in complete support of the BLM's Preferred Alternative…"	Statement of preference.
David and Nancy Field	86.1	OPP PA	"Any endorsement of the politically motivated route jumping north across SR 74 onto BLM land and running on that BLM land for 5 miles before again crossing back across SR 74 would be irresponsible."	Statement of preference.
David and Nancy Field	86.2	NEPA	"Such a route could only be justified if there was no reasonable alternative."	The NEPA does not provide direction as to which alternatives may, or should be, selected and implemented. Section 1505.2 of the NEPA, Record of Decision in Cases Requiring Environmental Impact Statements indicates that a record of decision shall, "Identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable. An agency shall identify and discuss all such factors including any essential considerations of national policy which were balanced by the agency in making its decision and state how those considerations entered into its decision."
David and Nancy Field	86.3	SOC	"Your study figures indicate it would be more expensive than the direct route on the south side of SR74."	The commenter accurately presents information contained in the EIS.
David and Nancy Field	86.4	LU	"There is undeveloped private land on the south side that should be obtained for this project."	Statement of preference.
David and Nancy Field	86.5	VIS	"A routing north of SR 74 would require a downgrade of the Visual Resource Management on 2,362 acres of BLM land and destroy one of the most scenic views in the area. Crossing the hi-way twice would also require impacting the east west views for travelers…"	The impact of the proposed transmission line on visual resources and the mitigation to minimize impacts, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
David and Nancy Field	86.6	PH&S	"…as well as creating additional exposure and potential risks."	Impacts to public health and safety from the transmission line crossing SR 74 were not identified as an issue or analyzed in the EIS as transmission lines routinely and safely cross roads and highways.
David and Nancy Field	86.7	SAAA	"The the proper routing for this Line should be Alternative 2 in your study. That routing is less expensive. has the least adverse visual impact and disturbs the least public land."	Statement of preference.
Kathleen Heitkamp	87.1	OPP ALT3	"I am writing to support No Power Lines in Trilogy or Vistancia."	Statement of preference.
Kathleen Heitkamp	87.2	SUP PA	"I support the preferred alignment of APS and the Arizona Corporation Commission, to move the power lines out of our community and onto public land (Bureau of Land Management) (State Route 74)…"	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Susan and Rich Miller	88.1	SUP PA	"We are so happy that the BLM has identified the Proposed Action route crossing BLM lands."	Statement of preference.
Susan and Rich Miller	88.2	SOC	"The Preferred route will minimize the socio-economic impact and help keep our property values…"	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values. Additional information and analysis has been added to this section.
Robert and Patricia Plack	89.1	SUP PA	"This letter is to affirm our support for routing of power lines North of State Route 74…"	Statement of preference.
J.P. and Cherilyn Cook	90.1	SUP PA	"I'm writing in support of the Bureau of Land Management's decision to create a utility corridor and utilize SR 74 as the Certified Route in support of APS placing their Sun Valley to Morgan 500/230kV Transmission line along SR 74/Carefree Hwy... placement along the north side of SR 74 as the most logical location and one that will least affect families, pristine desert and wildlife."	Statement of preference.
J.P. and Cherilyn Cook	90.2	PH&S	"…protects current and future home owners south of SR 74 from potential health risks.	Potential impacts for EMF are thoroughly analyzed in Section 4.7.
J.P. and Cherilyn Cook	90.3	SOC	" Protects property values already negatively impacted by current economic conditions · Maintaining or allowing for increasing property values will positively affect tax revenues which are currently suffering from current economic conditions · Protecting property values maintains or increases funding revenue for schools throughout Peoria. · We want to protect the vitality and future growth of our Master Planned community	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue.
J.P. and Cherilyn Cook	90.4	LU	" Precedence has been established in placing power lines along transportation corridors such as Loop 303 and I-17"	The EIS acknowledges that the stretch along SR 74 was designated as a transportation corridor in Section 1.1.2 Section 1.3.2 details BLM's purpose and need for the Project, including the need to amend the Bradshaw-Harquahala RMP to establish a utility corridor. The combined environmental impact of the Proposed Project with development of the transportation corridor is analyzed in Section 4.19 of the EIS.
J.P. and Cherilyn Cook	90.5	VIS	"Power lines along a transportation corridor affects scenic views on a part-time basis; power lines along family communities affects scenic views 100% of the time"	The impact of the proposed transmission line on visual resources, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
J.P. and Cherilyn Cook	90.6	VIS	"SR 74 is not officially designated as a scenic corridor"	The EIS clearly indicates that SR 74 is identified as a Scenic Corridor by Maricopa County, although it does not apply within the City of Peoria's jurisdiction. See section 3.14.1.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
J.P. and Cherilyn Cook	90.7	LU	"SR 74 is slated to become a major transportation corridor; it seems that utilizing this area as a transportation/utility corridor would minimize environmental impacts to the area"	The EIS acknowledges that the stretch along SR 74 was designated as a transportation corridor in Section 1.1.2 Section 1.3.2 details BLM's purpose and need for the Project, including the need to amend the Bradshaw-Harquahala RMP to establish a utility corridor in conjunction with the Proposed Action, Alternative 1, or Alternative 2. The combined environmental impact of the Proposed Project with development of the transportation corridor is analyzed in Section 4.19 of the EIS. This comment does not raise questions about the analysis or provide additional information for consideration.
J.P. and Cherilyn Cook	90.8	WLF	"Residents in Vistancia, Trilogy and Blackstone enjoy a multitude of wildlife in our community including coyote, javalina, roadrunners, bobcats, wild donkey, quail, rabbits and squirrels – surely alternative alignments in pristine desert will disturb these populations"	Impacts to wildlife and associated habitat (including sensitive species and their habitat) are analyzed and the mitigation to minimize impacts are both provided in Section 4.16.
J.P. and Cherilyn Cook	90.9	GEN	"Placement of power lines along the north side of SR 74 is supported…"	Statement of preference.
J.P. and Cherilyn Cook	90.10	GEN	"I respectfully request that BLM uphold your Resource Management Plan to allow placement of APS power lines on the north side of SR 74 described as the Certified Route."	Statement of preference.
Walter "Skip" Zahlmann	91.1	PH	"…THIS IS A FORMAL REQUEST FOR ADDITIONAL MEETINGS…"	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Walter "Skip" Zahlmann	91.2	PH	"The turnout was not evidenced by considerable turnout-except those that were being paid to be there… not one single government person-------be they local, State, or Federal-being present at the Wittmann hearing-which did not include a single resident from Circle City----"	Cooperating agencies were in attendance at various meetings and were appraised of the venues of all the meetings.
Walter "Skip" Zahlmann	91.3	INFO	"…please advise a.s.a.p.--who the people are and their contact information. If it is a committee----I would want the names and contact information of the committee so these matters are directly informed to the proper people and the powers to be-----"	Project contact information was distributed at the public hearings as well as the project website.
Walter "Skip" Zahlmann	92.1	INFO	"Please get the information and reply to me the answers you get…"	Project contact information was distributed at the public hearings as well as the project website.
Walter "Skip" Zahlmann	92.2	PH	"NEW HEARINGS MUST BE HELD----------"	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Walter "Skip" Zahlmann	93.1	PH	"why was the WICKENBURG SUN NOT NOTIFIED----------AND OTHER LOCAL NEWSPAPERS IN THAT AREA THAT CONSIDER RT 74 A SCENIC HYW------"	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notifications for public hearings were legally adequate.
Walter "Skip" Zahlmann	93.2	SOC	"…the information about property going down at least 29% to upwards of 40% and maybe even more???????? and confirmed by one of the congressmen…"	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.
Walter "Skip" Zahlmann	93.3	INFO	"Do you have information on why Peoria made Quintero spend 8 to 10 million to bury their lines???"	Further discussion of this issue was provided in an email from Joe Incardine dated 1.28.13

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlmann	93.4	INFO	"Now the BLM is covered by Federal law under the freedom of information----------so you have to provide the information or say you do not have----------or was not provided the information so the blame goes back to the City…"	No formal FOIA request submitted. Request for information beyond the scope of the BLM.
Walter "Skip" Zahlmann	93.5	PH	"NEW HEARINGS ARE MANDATED TO HAPPEN"	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Walter "Skip" Zahlmann	94.1	PH	"…THAT ALONE FORCES NEW HEARINGS TO BE HELD"	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Walter "Skip" Zahlmann	94.2	LU	"…THERE ARE MANY QUESTIONS REGARDING THIS COMMERCIAL PROPERTY ON THE SOUTH SIDE OF 74------THAT THE BLM IS SUGGESTING THEY WANT TO PROTECT AND USE 9 MILES OF BLM LAND"	Future use of private lands south of SR 74 is described in Section 3.6.3.4 of the EIS.
Walter "Skip" Zahlmann	94.3	LU	"THE JOB YOU ARE PAID TO DO –THAT YOU AND YOUR ORGANIZATION--------THE BLM-IS TO PROTECT LAND SET ASIDE FOR THE AMERICAN PEOPLE---------"	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Walter "Skip" Zahlmann	94.4	PH	"HOLD NEW MEETINGS WHEN THE BLM HAS ALL THE ANSWERS TO EXTREMELY IMPORTANT QUESTIONS, ALL THE DETAILS AND ALL THE INFORMATION THAT ARE EXTREMELY IMPORTANT TO MAKE ANY FINAL DECISIONS THAT INVOLVE PEOPLES LIVES AND FUTURE, ALONG WITH COMMUNITIES THAT HAVE BEEN HERE FAR LONGER THAN VISTANCIA AND SUN BELT HOLDINGS AND DIAMOND VENTURES……."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Walter "Skip" Zahlmann	94.5	SOC	"When speaking to one congressman----------he confirmed the de-valuation of people's homes and properties with regards to these towers----of a minimum of 29% to 40% in value--------THIS IS A CONGRESSMAN---- now this information also was not brought out by the BLM and never mentioned until the Wittman meeting [29% was mentioned] and the BLM did not address this issue when mentioned-avoided it completely really------"	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.
Walter "Skip" Zahlmann	94.6	SDA	"…APS got up to say the technology was not available to bury lines----------NOT TRUE------- maybe for long distances----but lines of this size are being buried all over the world…"	Section 2.7.10 explains why undergrounding the proposed transmission line was not carried forward for detailed analysis.
Walter "Skip" Zahlmann	94.7	SOC	"Just exactly when -----not planned dates or proposed dates----------Will Diamond Ventures and Sun Belt Holdings, and Vistancia----------when exactly will they---Diamond Ventures, Sun Belt Holdings and New Vistancia start their projects for Saddleback Heights, Vistancia, etc, etc the commercial properties and when do they see completion of these projects -------100% completion of the master plans for ALL RESIDENTIAL AND ALL COMMERCIAL PROPERTIES FROM PRESENT DAY Vistancia to south of Route 74 ?????????? We know Sun Belt Holdings has drastically changed their original master plan commitments to the City of Peoria—such as going from 15,000 homes to less than 10,000 --maybe more -------so what are the new projections ?????????????"	The estimated completion date for development of private land is only relevant to the analysis in terms of reasonably foreseeable projects that contribute to cumulative impacts, which are analyzed in Section 4.19 of the EIS.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlmann	95.1	SOC	"What is the cost for the original routing by the ACC –going on the south side of 74 to the Morgan sub station ?????? total estimated cost"	Information on the cost of the Alternative 2 route South of SR 74 is contained in the EIS in Section 2.5.3. Costs of development of the Project along any route, including those alternatives dismissed from detailed analysis (Section 2.7) are contained in the discussion of each alternative.
Walter "Skip" Zahlmann	95.2	SOC	"What is the cost for the routing using the Cave Creek line from Sun Valley following the canal up to Morgan ???????? total estimated cost"	See Comment ID No. 95.1.
Walter "Skip" Zahlmann	95.3	SOC	"What is the total cost using those 9 miles of BLM land by going over and back again to Morgan----one estimate for the 9 miles over and back is between 3 and 6 million in today's dollars. APS costs ? ????"	See Comment ID No. 95.1.
Walter "Skip" Zahlmann	95.4	SOC	"What is the cost of the nine miles in terms of land costs—actual today's dollars it would cost for this land---Plus the commercial property value along this 10 lane highway that is in work for that area.???? Land values ?????"	The requested land values are not relevant to the analysis on the EIS.
Walter "Skip" Zahlmann	95.5	SOC	" I have been informed by one of the congressman---------that the depreciation in land value will be between 29% and 40 %-. –Wittman and Circle City, Please confirm this information and from what source. ?????"	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values. Sources are cited in the text of the EIS and are contained in the References section of Chapter 7.
Walter "Skip" Zahlmann	95.6	PH	"If you do not have the information that is extremely important and vital to any hearing especially new ones------then the new hearings must be held when the City of Peoria, Diamond Ventures, and Sun belt Holdings along with Cathy Carlat answering a whole lot of questions------- and we have all the information, all the documents, all the details and all the information that is needed before any decision can be made--------We have to start over"	The comment calls into question the procedures followed by the agency for public meetings and does not raise questions about the analysis or provide additional information for consideration in the EIS. Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Walter "Skip" Zahlmann	95.7	SDA	"AS BURYING LINES HAS BEEN DONE WORLD WIDE AND IS BEING DONE--------APS HAS TO ALSO RE-FOCUS ON THAT ISSUE ALONG WITH THE COSTS OF ALL ROUTES TO THE MORGAN SUB STATION."	Section 2.7.10 explains why undergrounding the proposed transmission line was not carried forward for detailed analysis.
Walter "Skip" Zahlmann	96	UC	Content Unrelated to analysis	
Walter "Skip" Zahlmann	97.1	SDA	"IF THIS IS TRUE----------THAN YOU HAVE TO FORCE APS TO BURY THEIR LINES THAT ARE ON BLM LAND FOR SOME 9 MILES----"	Section 2.7.10 explains why undergrounding the proposed transmission line was not carried forward for detailed analysis.
Walter "Skip" Zahlmann	97.2	PH	"THIS TOO IS INFORMATION THAT WAS NOT BROUGHT OUT IN ANY HEARINGS IN THE PAST-------SO AGAIN A CALL FOR NEW HEARINGS IS MORE THAN JUSTIFIED."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Walter "Skip" Zahlmann	101.1	NEPA	"As you so clearly state below----------and I quote – " the BLM had asked the City of Peoria to be a co-operating agency some time ago ". WE KNOW FOR A FACT THAT THEY HAVE NOT THESE PAST 2 TO 3 YEARS"	Section 1.4 of the EIS provides information on agencies that elected to participate as cooperators in the Project.
Walter "Skip" Zahlmann	101.2	SOC	" some of my questions that I have asked the BLM-pertain to APS and their estimated costs for the different routes and ultimately the increased costs to all the rate payers and for how many years, etc, etc,"	See Comment ID No. 95.1.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlmann	101.3	SDA	"… they can be buried when we were told they cannot…"	Section 2.7.10 explains why undergrounding the proposed transmission line was not carried forward for detailed analysis.
Walter "Skip" Zahlmann	104.1	NEPA	"Let's be clear as to what the term " Cooperating Agency " means in real terms----------I am sure they –the City of Peoria and the City Council and a specific council member claim to be cooperating-----we know they have not as we the public have been asking for details, documents, documentation, meetings, minutes ,etc, etc, -----but we also know for "A fact " that they have lied, used people to lie for them, have used a congressman that has no representation here in Peoria, have possible illegal connections to people and companies , have refuse to inform the public of many issues that they have been asked for under Arizona law and that you—the BLM-- have confirmed those FACTs------in -that they have not provided you—the BLM-with all the information that is required and we continue to ask the City of Peoria, the City Attorney and this specific council member-------and they have refused for the past 18 months the information requested----------as you have confirmed they have been doing and continue to do at the present time."	See Comment ID No. 101.1.
Walter "Skip" Zahlmann	104.2	PH	"New hearings must be held so everything is brought out for the public to read and hear---------- not just what the BLM and the City of Peoria thinks is all we should know is what they have decided we should know. We know for a fact-people in Wittman and Circle City and that surrounding area along with the Wickenburg area- and newspaper-were also not notified and you have 120 plus signatures stating that as fact."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notifications for public hearings were legally adequate.
Walter "Skip" Zahlmann	104.3	PH	"You-the BLM tried to continue a meeting without it being recorded and documented. There were no local or Federal officials who represent the Wittman area and surrounding areas-----to be involved-----but you and the BLM claim to have a congressman / person who represents no one from this area at all-on Board-----yet when I spoke to them-they wanted nothing to do with the situation and asked me why –as they do not represent anyone from this area----"	Cooperating agencies were in attendance at various meetings and were appraised of the venues of all the meetings.
Walter "Skip" Zahlmann	104.4	SOC	"…another congressman told us point blank------that property values will decrease up wards of 40% and that was never mentioned by anyone at any meeting -----"	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.
Walter "Skip" Zahlmann	106.1	INFO	"who is / are the main persons within the ACC and APS regarding these power lines and their placement, the contact person or persons at the ACC and APS----------regarding these many issues. Especially the routes and costs involved in the different route proposals especially the one using BLM land----"	Joe Incardine responded to individual on 1.3.13 indicating that EIS has information. Gave contacts at APS.
Walter "Skip" Zahlmann	106.2	NEPA	"It has been told to me----that at the first meeting I attended at the BLM about a year ago at the BLM offices-that the final decision was already made as to the route--------and that was using BLM land----------If certain decisions had pre-empted any meetings held by you and the BLM with and other concerned parties, regarding the proposed different routes that now were supposedly under consideration, please let us know and who to contact at that level-"	The EIS indicates that the Proposed Action is the agency preferred alternative and appropriate NEPA has and is being done. The agency's final decision will be documented in a Record of Decision, which will be issued subsequent to publication of the Final EIS.
Walter "Skip" Zahlmann	106.3	NEPA	"That the other proposed routes were never in consideration and that was not the focus on that meeting or any meeting after----This is new news to me and many others."	Chapter 2 of the EIS provides information on all alternatives that are either analyzed in detail in the EIS or were considered but eliminated from detailed analysis.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlmann	106.4	NEPA	"From what has been going on and explained to the communities----that the application to the BLM, by the ACC, can still be rejected, not to use BLM land-and force the route to the south side of Rte. 74 ????"	Table 1.5-1 provides information on the decisions to be made by the BLM with regard to the project. Section 2.6 describes the No Action Alternative.
Leigh Johnson, Park Planner, Maricopa County Parks & Recreation Department	107.1	VIS	"Figure 4.14-20b (Key Observation Point 16) simulates the power lines as seen from Roadrunner Campground inside Lake Pleasant Regional Park. This view may disrupt the recreational experience of visitors who routinely respond in our Visitor Use Surveys that they value open, undeveloped views of the surrounding landscape."	Impacts of the transmission line on the recreation experience at Lake Pleasant Regional Park are analyzed in Section 4.9.2.2 and the impacts on the visual resources of the Park are analyzed in Section 4.14. Mitigation measures for impacts to visual resources are provided in Section 4.14.4.
Leigh Johnson, Park Planner, Maricopa County Parks & Recreation Department	107.2	VIS	"Figure 4.14-17b (Key Observation Point 20) simulates the power lines as seen from the intersection of Castle Hot Springs Road and SR 74 looking south. As previously stated, the view may have impacts on park visitors seeking refuge from everyday development."	The impacts of the transmission line on the recreation experience at Lake Pleasant Regional Park are analyzed in Section 4.9.2.2 and the impacts on the visual resources of the Park are analyzed in Section 4.14. Mitigation measures for impacts to visual resources are provided in Section 4.14.4.
Leigh Johnson, Park Planner, Maricopa County Parks & Recreation Department	107.3	OPP RMPA	"Changing the VRM from Class Ill to Class IV is a concern for our park's visitor experience as they drive to and visit Lake Pleasant Regional Park."	The impacts of the transmission line on the recreation experience at Lake Pleasant Regional Park are analyzed in Section 4.9.2.2 and the impacts on the visual resources of the Park are analyzed in Section 4.14. Mitigation measures for impacts to visual resources are provided in Section 4.14.4.
Leigh Johnson, Park Planner, Maricopa County Parks & Recreation Department	107.4	LU	"the City of Peoria and Maricopa County have both developed scenic corridor guidelines to maintain the high quality views along the SR 74 corridor."	The impact of the proposed transmission line on visual resources, and specifically the visual resources of SR 74, is analyzed in Section 4.14. Mitigation measures for impacts to visual resources are provided in Section 4.14.4. Section 3.14.1 describes the scenic guidelines for the City of Peoria and Maricopa County.
Leigh Johnson, Park Planner, Maricopa County Parks & Recreation Department	107.5	VIS	"If APS takes a vegetation management approach underneath these proposed power lines (as it did in 2009 on the east side of Lake Pleasant) by razing all standing vegetation, this will further erode the very views and experiences that residents and visitors expect to find in this area."	The impacts of the transmission line on the recreation experience at Lake Pleasant Regional Park are analyzed in Section 4.9.2.2 and the impacts on the visual resources of the Park are analyzed in Section 4.14. Mitigation measures for impacts to visual resources are provided in Section 4.14.4. BMPs, monitoring, and Vegetation Management are all thoroughly described in the EIS. Additional details on proposed vegetation management has been added to Chapter 2 and a revised Vegetation Management Program is included in Appendix 2B.
Leigh Johnson, Park Planner, Maricopa County Parks & Recreation Department	107.6	VIS	"MCPRD prefers the use of self-rusting utility poles that may blend into the landscape and a vegetation management policy that keeps vegetation intact to preserve the scenic Sonoran Desert views and experiences."	Statement of preference. BLM is working to minimize visual impacts through the use of available colors for proposed transmission line structures, as described in Section 4.19.4.
Thelds Williams, District 1 Councilwoman	108.1	SOC	"I feel strongly that the comments and concerns of surrounding property owners should be taken into consideration."	All comments and concerns are reviewed, evaluated, and considered.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlmann	109.1	SUP NA	"…the most important issue---------if, or better stated, when the BLM denies the use of their land as they should------APS has already stated they will go back to the drawing board, contact the ACC and come up with new proposals to get to the Morgan substation-without the use of BLM land."	Additional information has been added to the No Action Alternative write-up in Chapter 2 and the ACC process in Chapter 1.
Walter "Skip" Zahlmann	109.2	LU	"…WE HAVE NO OPTIONS TO GET BACK THIS BLM LAND EVER-"	Section 2.3.2 describes that a ROW would be issued to APS for 30 years. Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Walter "Skip" Zahlmann	109.3	SOC	"…the rate payers will pay only once--------not twice by, first one-- adding to the increase to rate payers, the second one the destruction of extremely valuable land by using BLM land that can never be gotten back for the American people. { I have asked for the estimated value and cost of this land to the American people????} It can never be replaced because of the area and setting where it exists and for hundreds-thousands of years. The true value cannot be calculated in dollars……we all know that."	Section 4.10 has been updated to include how APS increases rates and whether it would depend upon which alternative is selected. Section 4.10 also includes a discussion of the impacts of the project to non-market values, such as recreation.
Walter "Skip" Zahlmann	109.4	LU	"As neither agency-the ACC nor APS can force the use of BLM land----------there is land south of rte. 74, and it disturbs no one or anything----------and will eventually be disturbed by a 10 lane highway and commercial development----------keeping BLM land as it was intended to be used and for all Americans. Not special interest groups such as the City of Peoria, paid elected officials and politician's, and their special interests in Diamond Ventures and Sun Belt Holdings."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Walter "Skip" Zahlmann	109.5	PH	"We are asking for new hearings and an extension to the comment period----------and that is solely based on that there is so much missing , so many lies and false information, missing info, hidden info, purposely not providing info, public official's lying and purposely using people and misinformation, people not being notified properly, petitions being sent to you with new ones coming, and so forth and so on."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notifications for public hearings were legally adequate.
Walter "Skip" Zahlmann	109.6	SSS	"we "briefly" discussed some, not all of Quintero----------and the issues it raises. You mentioned it was about 200 acres—I mentioning the possibility of 600 acres----the cost being discussed—not knowing , the desert tortious being on their land …….plus whether the City of Peoria did the proper studies they were required to do, to all Sun Belt Holdings and Diamond Ventures to build where these tortoises are located."	Impacts to wildlife and associated habitat (including sensitive species and their habitat) are analyzed in Section 4.16.
Walter "Skip" Zahlmann	109.7	INFO	"I have not forgotten the previous e-mails and request for copies and details and information that I have asked for from the BLM. The same goes for one of your cooperating agencies—the City of Peoria-which so far has not even responded or made available any copies, financials, information , any details and meeting records and written correspondence between the parties---------Certainly if they have sent you anything from what we have asked for and or discussed---------then either the City should be instructed to release them or the BLM has to make available all communications between these too cooperating agencies-regarding such things as Diamond Ventures, Sun Belt Holdings, commercial property, re-zoning along rte. 303, etc, etc and not just limited to what I am briefly mentioning in this reply to your e-mail."	Joe Incardine responded on 1.9.13 indicating that a package with information would be sent via FedEx. Package with select public documents was sent to commenter on 1.9.13. Portions of the request for information were beyond the scope of the BLM.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlmann	109.8	LU	"AGAIN THE BLM SHOULD NOT BE USED---- THE LAND HELD IN TRUST FOR ALL AMERICANS…"	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Walter "Skip" Zahlmann	109.9	PR ROW	"…BLM REFUSED ONCE BEFORE THE USE OF THIS LAND…"	This information is already contained in Chapter 1, Section 1.1.2.
Walter "Skip" Zahlmann	109.10	GEN	"THE ONLY PERSON MAKING ANY NEW LAND-----IS GOD-------AND BY ALL MEASURES HE HAS DECIDED TO BEGIN TO TAKE AWAY LAND AND MAYBE BECAUSE WE ARE NOT USING THIS EXTREMELY PRECIOUS COMMODITY PROPERLY…"	Unrelated content.
Walter "Skip" Zahlmann	109.11	LU	"…THIS BLM LAND CAN NEVER BE REGAINED. IT HAS TO BE SAVED"	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Walter "Skip" Zahlmann	109.12	INFO	"I are requesting copies of all documents, letters, all written communications, etc, etc , between all parties, (APS, BLM, individuals, the ACC, etc, etc,.) regarding the appeals process that the APS undertook when the BLM refused the use of the land held in trust for the American People back in 2010. We are requesting all the reasons why APS was refused , and what specifically was the basis for the appeal that APS gave to the BLM for making the appeal------[all reasons] the actual communications between the parties and their lawyers. It is my understanding that there were a number of issues-one being that there was a lack of openness and lack of certain information on the part of the BLM in rejecting the use of BLM land, giving APS room to make the appeal---------- intentionally or un-intentionally by the BLM."	Joe Incardine responded on 1.9.13 indicating that a package with information would be sent via FedEx. Package with select public documents was sent to commenter on 1.9.13. Portions of the request for information were beyond the scope of the BLM.
Walter "Skip" Zahlmann	109.13	OPP PA	"as we know there are far less damaging routes that are available and far less costly and far less damaging to people, COMMUNITIES, and wild life."	Sections 2.5.1, 2.5.2, and 2.5.3 of the EIS explain Alternative 1, 2, and 3 routes, respectively, in detail, and these alternatives are analyzed in Chapter 4. Alternatives considered but dismissed from detailed analysis are contained in Section 2.7.
Walter "Skip" Zahlmann	109.14	LU	"…the BLM as the guardian of this land held in trust for All the American people----------can deny any and all requests to use this land for other purposes [such as APS towers }, just based on the fact that this land is held in trust for ALL the American people---------and can also deny any appeal to overturn the original decision to refuse access and use of this 9 mile stretch of BLM land."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Walter "Skip" Zahlmann	109.15	INFO	"We also want copies of all communications between the parties-------meetings, notes, minutes, who attended, where and when----------when it was decided to change the decision to refuse use of this BLM land----------and now having before us the proposal to use this BLM land for other purposes other than what Congress and the people of the United States had intended."	Joe Incardine responded on 1.9.13 indicating that a package with information would be sent via FedEx. Package with select public documents was sent to commenter on 1.9.13. Portions of the request for information were beyond the scope of the BLM.
Walter "Skip" Zahlmann	109.16	GEN	"…when was this BLM land set aside by congress for its protection and for the sole use by the American people ----------the month and year and under what congressional act."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Tony Dudzinski	110.1	SUP PA	"…please request that the APS power lines be built north of the Vistancia community on the north side of State Route 74…"	Statement of preference.
Bernadine McCollum	111.1	OPP FL	"I do not think APS should get approval for the transmission line across 9 miles of Federal public lands, destroying this corridor of saguaro-studded desert."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bernadine McCollum	111.2	SAAA	"APS should use the southern alternative where land has already been disturbed."	Statement of preference.
Bernadine McCollum	111.3	SDA	"A more cost effective solution would be for APS to run the line along the existing canal route."	Analysis of the CAP Complete route is contained in Section 2.7.4.
Jack and Cora Williams	112.1	SR74	"Jack and I are very supportive of the APS lines going on the SR 74 as was told to us in previous meetings."	Statement of preference.
Jack and Cora Williams	112.2	OPP ALT3	"We, are residents of Trilogy, believe it would have a great impact on our property values if the plan were changed to the Vistancia area"	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.
Walter "Skip" Zahlmann	113.1	PH	"NEW HEARINGS ARE MUST AS WELL AS A MUCH LONGER COMMENT PERIOD SO THIS AND MANY OTHER THINGS THAT WE ARE NOW JUST DISCOVERING –CAN BE FOCUSED ON IN THESE NEW MEETINGS----------AND COMMENT PERIOD."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Walter "Skip" Zahlmann	113.2	LU	"The Federal Land Policy and management Act of 1976-clearly states the criteria for land disposal by the BLM---- 1.] Scattered and Isolated tracts that are difficult or uneconomical to manage 2.] Tracts acquired for a specific purpose that purpose no longer needed 3.] Land where disposal will serve important public objectives. [there being no other options available.} We know APS has many options------"	The Proposed Project does not involve a proposal by the BLM to dispose of public lands.
Walter "Skip" Zahlmann	113.3	PH	"THERE IS SO MUCH THAT HAS NOT BEEN DICUSSED IN THESE SO CALLED OPEN PUBLIC HEARINGS THAT IT IS A TRAVESTY TO THINK THAT THE BLM CAN MAKE ANY OTHER DECISION OTHER THAN TO DENY THE APPEAL BY APS AND DENY THE USE OF BLM LAND."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Merl Schafer	114.1	VIS	"Somehow I fail to see how the addition of 165 foot towers to the landscape will fulfill *'the county's strong interest in preserving the attractive Sonoran Desert landscape that SR 74 traverses for much of its length*.'"	The impact of the proposed transmission line on visual resources, and specifically the visual resources of SR 74, is analyzed in Section 4.14. Mitigation measures for impacts to visual resources are provided in Section 4.14.4. The EIS also addresses Maricopa County's Scenic Corridor, which allows for high voltage transmission lines.
Merl Schafer	114.2	OPP PA	"It seems to me to fulfill this statement, the power lines either have to buried on the BLM land and the landscape restored, or reject this proposal from APS. I am absolutely sure that if anyone other than APS came to you with a proposal to build anything 165 feet tall, the length of the BLM property, it would be immediately rejected."	Statement of preference. Section 2.7.10 explains why undergrounding the proposed transmission line was not carried forward for detailed analysis.
Merl Schafer	114.3	INFO	"Please respond to me the rational of allowing this atrocity on our public land north of SR 74."	Rationale is provided in Chapters 1 and 2 of the EIS document.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlmann	115.1	SAAA	"IF WE KNOW THIS LAND ON THE SOUTH SIDE OF RET 74 WILL BE CHANGED FOREVER-------- DRASTICALLY CHANGED destroyed --THEN WHY NOT DRASTICALLY CHANGE ONLY ONE SIDE-THE SOUTH SIDE OF RTE 74-AS WE KNOW THIS WILL BE DONE AND SAVE THE NORTH SIDE OF RTE. 74 –THE BLM LAND"	Statement of preference.
Walter "Skip" Zahlmann	115.2	VIS	"PLUS WILL SAVE A CONTINOUS SCENIC VIEW GOING NORTH FROM RTE. 74----AS BLM LAND CONTINUES FROM THE NORTH SIDE OF RTE 74 NORTH FOR SOME DISTANCE"	The impact of the proposed transmission line on visual resources, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
Walter "Skip" Zahlmann	115.3	GEN	"…your mission as being part of the BLM-to protect natures gift , the land, the wild life, the environment, protecting the wild vegetation, all things that is the true mission of the BLM from day one when it was set up by Congress."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Walter "Skip" Zahlmann	115.4	SAAA	"AND LET APS FIND THE OTHER OPTIONS THAT THEY KNOW THEY HAVE----------THE SOUTH SIDE OF RTE 74 IS GOING TO BE DEVELOPED AND DESTROYED LET APS BE A PART OF THAT DESTRUCTION AND THE BLM BE A PART OF SAVING AS MUCH AS IT CAN----"	Statement of preference.
Walter "Skip" Zahlmann	115.5	SOC	"IT WILL ALSO SAVE MONEY AND THE RATEPAYERS MONEY…"	Section 4.10 has been updated to include how APS increases rates and whether it would depend upon which alternative is selected and if APS would have to go back to the ACC to restart the process and/or request a modification to the route.
Sierra Club on behalf of Rosemary Kist	116.1	OPP FL	"Please reject siting the proposed Sun Valley to Morgan 500/230kV Transmission Line Project on public lands…"	Statement of preference.
Sierra Club on behalf of Rosemary Kist	116.2	OPP RMPA	"…do not amend the Resource Management Plan to accommodate this siting."	Statement of preference.
Sierra Club on behalf of Rosemary Kist	116.3	LU	"Siting this line on our public lands north of SR74 is not in the best interests of the public and does not support the mission of the Bureau of Land Management (BLM)."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need, which is supported by FLMPA.
Sierra Club on behalf of Rosemary Kist	116.4	LU	" Instead, it primarily benefits one developer, while sacrificing important public resources."	The process that sites transmission lines is the responsibility of the Arizona Corporation Commission (ACC). The ACC line siting process is a public process that allows the public to comment.
Sierra Club on behalf of Rosemary Kist	116.5	OPP PA	"I am disappointed that the BLM's Preferred Alternative in the Draft Environmental Impact Statement is to site this line to the north of State Route 74. The information in the DEIS indicates that this route could have a tremendous negative impact on resources, including on sensitive desert tortoise habitat, recreation opportunities, scenic beauty, and more."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sierra Club on behalf of Rosemary Kist	116.6	OPP RMPA	"The Resource Management Plan (RMP), which was published only a couple of years ago, determined that a transmission line right-of-way is inappropriate for this area due to the negative impacts it would have. Less than a year after the RMP was finalized, however, the developer began pushing the BLM to change it to accommodate this line proposal. The BLM should say no to the developer and continue to manage these lands for their natural resource values."	Statement of preference.
Sierra Club on behalf of Rosemary Kist	116.7	OPP PA	"I strongly recommend that the BLM reject this proposal and maintain that this area is off-limits to transmission lines."	Statement of preference.
Sierra Club on behalf of Rosemary Kist	116.8	SUP NA	"Please select the No Action Alternative in the DEIS and do not amend the RMP."	Statement of preference.
Sierra Club on behalf of Rosemary Kist	116.9	GEN	"The financial gain of a small group is an inappropriate consideration when the duty of BLM is to serve the greater good of the PUBLIC."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need. The ACC is the agency that determines utility locations.
Walter "Skip" Zahlman	199.1	OPP FL	"The BLM has to refuse the use of their land."	Statement of preference.
Walter "Skip" Zahlman	200.1	NEPA	"…I met with a congressman's office this morning for 2 hours plus—they attempted to do the same thing-but interesting ------claimed that the first meeting I went to some maybe 1 or 18 months ago---things were pretty much decided already and really no need for any meetings to just look good and maybe follow the law-"	The EIS is clear in Section ES.10 that a Record of Decision will be prepared after publication of a Final EIS and required reviews.
Walter "Skip" Zahlman	200.2	PR ROW	"I have a flyer from the BLM that back in 2010-rejected the use of their land -------period-------one of the issues now----the issue now comes to the front was why that has changed."	This information is already contained in Chapter 1, Section 1.1.2.
Walter "Skip" Zahlman	200.3	PH	"…we demand NEW MEETTINGS –PRIOR TO ANY DECISION THAT THE BLM PLANS TO MAKE---"	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Walter "Skip" Zahlman	200.4	INFO	"…EXPECT THE COPIES OF DOCUMENTS, DETAILS, MEETINGS, EVERYTHING INVOLVING THE CITY OF PEORIA, the APS, and the Acc, and the answers to all of our questions that we have raised so far------We will also be asking for the documents and information , details, all letters being written to the BLM –that the BLM has used and plan to use in the decision making process."	No formal FOIA request submitted. Request for information beyond the scope of the BLM.
Walter "Skip" Zahlman	200.5	SOC	"One example used was the loss of property values in the 29 to 40% range----------nowhere is this mentioned at all."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.
Walter "Skip" Zahlman	200.6	PH	"Regarding proper notice----------well we know you have signed petitions of some 150 names so far the Wickenburg newspapers, and we have contacted local newspapers in the Wittman and Circle City areas-and they too have no knowledge------ and we will be canvasing these areas of some 8,000 residents and those that are only part timers ----------but have a legal right to be informed and of such matters."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notifications for public hearings were legally adequate.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlman	200.7	SDA	"We will be approaching the ACC , APS, as they for the record claimed-they do not have the technology to bury lines--------that is an outright lie-------"	Section 2.7.10 explains why undergrounding the proposed transmission line was not carried forward for detailed analysis.
Walter "Skip" Zahlman	200.8	INFO	"You have all the emails and requests for copies, especially the from the City of Peoria, of letters, financials, pros, and cons------especially from the elected officials------and all of those requests still stand-and are even more important now that there are numerous issues that have never been brought up brought out, some hidden, some lied about, some just plain false-----and now we need answers-------"	Request for information beyond the scope of the BLM.
Walter "Skip" Zahlman	200.9	PH	"WE ARE REQUESTING NEW HEARINGS FROM THE BLM"	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Walter "Skip" Zahlman	200.10	PR ROW	"I will mention that back in 2010-the BLM rejected the use of their land------AS YOU PLAINLY ADMIT--------"	This information is already contained in Chapter 1, Section 1.1.2.
Richard Kaufman	201.1	NEPA	"On P.1-17 your Table 1.7.1"Formal Scoping ... " does not include the June 8, 2011 5:30-8:00 PM scoping meeting which included a representative of the Az. St. Land Dept., the Manager of the Lake Pleasant Regional Park, a spokesman for the Sierra Club and numerous members of the Public. More severely showing the BLM bias against the Public is the Economic Strategies Workshop's (P.1-18) and in Table 1.8.2 (P. 1-19) statement amending the RMP "would benefit developers"."	The June 8, 2011 meeting was an Economic Strategies Workshop, which is discussed in the EIS in Section 1.8. Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The referenced text is stating the issue as it was raised during scoping and is not expressing bias against the public on the part of the BLM.
Richard Kaufman	201.2	NEPA	"BLM did not have a workshop for Maricopa County Taxpayers who fund Lake Pleasant Park where over 1.5-million folks enjoyed themselves 2011, thanks to our Public and the BLM's cooperation for over 58 years."	Maricopa County taxpayers were invited to and welcome at any of the formal scoping meetings listed in Table 1.7-1 of the EIS. Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project.
Richard Kaufman	201.3	GEN	"Industrializing the vicinity near the BLM lands, buffering the Park's entrance and lands westward along SR74, shows us that BLM's words are broken."	The comment does not raise questions about the analysis or provide additional information for consideration.
Richard Kaufman	201.4	SOC	"BLM did not have a workshop for APS Customers who will pay for Sun Valley-Morgan as electric rates will increase. We are APS electric-bill payers and rising rates should not be decided by the BLM. Rates will increase much more if the Proposed Action or Alternate-1 is BLM's decision, and the ACC's political decision on SV-M will remain; ACC set up BLM politically. BLM will hurt the Public rate wise because the Proposed Action/Aiternate-1 already are too expensive for SV-M."	Section 4.10 has been updated to include how APS increases rates and whether it would depend upon which alternative is selected and if APS had to go back to the ACC process.
Richard Kaufman	201.5	SOC	"BLM missed Proposed Action/Alternate-1 additional millions in APS costs for crossing SV-M over the "10-lane wide freeway" SR74 will become as reported in the Draft- 20+ lanes wide for medians, shoulders, freeway lanes and spaces for the required safety-structures. Since APS will have to return for constructions as the freeway will be built in stages, millions, millions more, in costs APS will have. The Proposed Action and the Alternate-! each are way too costly. APS wants a SV-M construction once. Ratepayers want only one hearing raising electric bills."	The potential impact of widening SR 74 is considered in the cumulative impacts to Socioeconomics in Section 4.19.11 and Transportation in Section 4.19.13. Given the estimated timeframe for the SR 74 expansion project (25 years or more in the future) any impacts to utility rates cannot be known.
Richard Kaufman	201.6	SUP NA	"We respectively select BLM's "No Action Alternate" to be the Final EIS decision on SV-M."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
See petition	202.1	PH	"Due to inadequate notification of the public hearing of the Proposed APS Sun Valley to Morgan 500/230KV Transmission Line Project and Proposed Resource Management Plan Amendment, the residents of the area that will be impacted by this project request another meeting."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notifications for public hearings were legally adequate.
See petition	202.2	SOC	"The transmission line will have great, and long ranging effects on the community for health and safety, property value, recreational use, and the socioeconomic justice of that part of the community that has been identified as low income who were not represented."	The EIS acknowledges the potential for significant impacts to public health and safety, recreation, EJ, and socioeconomics, and analyzes impacts to those resources in Sections 4.7, 4.9, and 4.10, respectively. Additional information was added to these sections as appropriate. The socioeconomics section analyzes impacts to low income communities.
See petition	203.1	PH	"Due to inadequate notification of the public hearing of the Proposed APS Sun Valley to Morgan 500/230KV Transmission Line Project and Proposed Resource Management Plan Amendment, the residents of the area that will be impacted by this project request another meeting."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notifications for public hearings were legally adequate.
See petition	203.2	SOC	"The transmission line will have great, and long ranging effects on the community for health and safety, property value, recreational use, and the socioeconomic justice of that part of the community that has been identified as low income who were not represented."	The EIS acknowledges the potential for significant impacts to public health and safety, recreation, EJ, and socioeconomics, and analyzes impacts to those resources in Sections 4.7, 4.9, and 4.10, respectively. Additional information was added to these sections as appropriate. The socioeconomics section analyzes impacts to low income communities.
Jeff Dixon	204a.1	SUP PA	"We as a community support the proposed route."	Statement of preference.
Jeff Dixon	204a.2	OPP ALT3	"We don't want to see power lines in the north end of our community."	Statement of preference.
Jeff Dixon	204a.3	SOC	"The Draft EIS does recognize the decrease in property values. That's very important. And it will have an impact on all the areas and the planned programming for the City of Peoria and others on private property. The proposed plan helps everyone."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.
Garrick Taylor	204b.1	SUP PA	"…the Arizona Chamber believes that the Sun Valley to Morgan Draft EIS preferred alternative, which includes a 200-foot electric transmission line right-of-way through approximately nine miles of BLM land, is consistent with the Department's priorities and has minimal impacts, that can be mitigated, given its place next to existing and planned freeways."	Statement of preference.
Garrick Taylor	204b.2	RENE	"The Sun Valley to Morgan line is an essential component of our region's electricity service, providing powerful businesses and citizens alike. This line completes the reliability and redundancies of electric infrastructure around the Phoenix Metropolitan area, as well as provides the transmission opportunity to move solar and renewable energy to demand centers here in the southwest."	Statement of agreement for information presented in Chapter 1.
Garrick Taylor	204b.3	SUP PA	"The Arizona Chamber supports the BLM's DEIS recommendation for the preferred alternative."	Statement of preference.
Walter "Skip" Zahlmann	204c.1	LU	"BLM land is land owned by the American people, not by Peoria, not by Vistancia, not by Trilogy, certainly not by any community. But, more importantly, it should never be used for a corporation by the name of Diamond Ventures."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Walter "Skip" Zahlmann	204c.2	VIS	"At no time during these meetings has Vistancia been going to be affected by these power lines…We were never going to see it. It doesn't affect us."	The impact of the proposed transmission line on visual resources is analyzed in Section 4.14.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlmann	204c.3	PH&S	"Part of the argument…about all the health hazards and that, you know, if we keep going under these power lines, we're going to grow an extra pair of legs…if the health issues that you have all raised, okay, are so important to you, now you're saying: Let's take this power line and cross over 74, a major highway, and …run it along BLM land…and you're going to cross back down. So you're forcing people on a major highway to go under these power lines that you all or some of you say is going to cause a second head or six fingers."	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.
Walter "Skip" Zahlmann	204c.4	SOC	"What is it costing? I would like APS to tell us what it's going to cost us to go along on the north -- on the southern part, cross over 74, go nine miles across, and then cross back down. What is the cost going to be? Because every rate-payer, every citizen that uses APS, is going to have to pay for that cost. That's an increase."	Section 4.10 has been updated to include how APS increases rates and whether it would depend upon which alternative is selected.
Cathy Carlat	204d.1	GEN	"I would like to thank the Bureau of Land Management for their involvement and taking the time to do such a conclusive evaluation; taking into consideration environment and economic impacts, technical impacts; doing all of the things that they needed to do to perform their mission; producing a one-thousand page booklet that comes back to the preferred alignment…"	Statement of opinion.
Lynda Reithmann	204e.1	PH&S	"The issue is not whether or not we will be able to see the power lines. The issue is that there are serious health risks to these lines…the United States National Council on Radiation Protection that listed health effects from exposure to low levels of electromagnetic radiation. And these effects include sudden death --infant death syndrome, childhood leukemia, and Alzheimer's."	Impacts to Public Health and Safety under all alternatives are analyzed in Section 4.7. The information provided in this comment is consistent with information contained within the EIS.
Lynda Reithmann	204e.2	SOC	"…homes in close proximity to power lines decrease in value. Because of the poor economy, our property values have already seen a decrease, and we know that there will be eventual recovery from that. But our studies show that there will be no recovery when power lines are placed within communities."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.
Lynda Reithmann	204e.3	SUP PA	"we join forces…in supporting placement of the power lines along the north side of State Route 74…"	Statement of preference.
Lynda Reithmann	204e.4	OPP ALTs	"we continue to reject placement along the Alternative 2 and Alternative 3 alignments."	Statement of preference.
David Field	204f.1	SOC	"…there's a $3 million difference. $3 million more, to run that, that dangerous power line, across the highway, down along the north side, and then back across."	The EIS acknowledges differences in construction costs between the alternatives.
David Field	204f.2	LU	"I do not understand why we are protecting the undeveloped private land, at the - the expense of the BLM land, which…is public land. I love that land up there. It's a beautiful view…We're never going to get new public undeveloped land. That's disappearing. It's disappeared too much in Arizona."	Section 4.19.7.1 of the EIS describes the present and future development of lands within the cumulative effects area.
David Field	204f.3	SAAA	"We can run that power line, serve all the power it needs, run it on the south side of the highway, right along the highway. Protect BLM land. Protect the scenery."	Statement of preference.
David Field	204f.4	SSS	"I don't know how many of you have ever seen a desert tortoise…I have seen one…And I saw it, right up north of -- of the land-- of the road."	Sections 3.16 and 4.16 provide information on the desert tortoise in the project area.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Field	204f.5	LU	"…we don't need to tear that land up for the power line. The power line is going to serve public interest, housing interest, commercial development, everything else. It ought to stay on -- on private land…"	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Sandy Bahr	204g.1	OPP PA	"The Sierra Club is very much opposed to the BLM's proposal…to move the transmission line north of State Route 74."	Statement of preference.
Sandy Bahr	204g.2	GEN	"It will open up sensitive habitat to additional degradation, as well as destroy the Phoenix corridor. "	Impacts to wildlife and associated habitat (including sensitive species and their habitat) are analyzed in Section 4.16. Mitigation measures are also addressed in the referenced section.
Sandy Bahr	204g.3	OPP PA	" We think that the BLM should reject the right-of-way application and also not change the Resource Management Plan, reject that, as well."	Statement of preference.
Sandy Bahr	204g.4	RENE	"I'd love to see any bit of factual information that this transmission line would facilitate renewable energy. That is something that we look at very closely, and it's a way to make things look better when -- when they're really not so great."	The validity of the claim that the project would facilitate renewable energy would not change the proponent's objectives or the BLM's purpose and need for the project. Additional information on renewable energy has been added to Chapter 1.
Sandy Bahr	204g.5	OPP RMPA	"We think it's inappropriate to change the RMP…"	Statement of preference.
Sandy Bahr	204g.6	SOC	"We think it's inappropriate to…grant this right-of-way merely to advantage a developer who perceives that this transmission line will affect the value of his land or further benefit remote urban sprawl."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Sand Bahr	204g.7	LU	"As this proposal would affect public land, it's supposed to be in the best interest of the public, rather than one individual private developer."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Sand Bahr	204g.8	GEN	"If the RMP is amended and the line is allowed to be built north of SR 74, we're concerned that it will result in a significant degradation of the land and a diminished view, especially in light of the fact that the proposal would not only run along 74 but would actually cross it."	The impact of the proposed transmission line on visual resources, and specifically the visual resources of BLM lands north of SR 74, is analyzed in Section 4.14. Mitigation measures for impacts to visual resources are provided in Section 4.14.4.
Sand Bahr	204g.9	LU	"This would nudge development further into the BLM lands and could result in a subsequent loss of interest by BLM to manage these lands for conservation."	The EIS Table 1.5-1 explains the decisions to be made, and these decisions are specific to the future use of the public lands managed by the BLM.
Sand Bahr	204g.10	OPP PA	"…we urge BLM to reject this proposal."	Statement of preference.
Donald Begalke	204h.1	NEPA	"I am very disappointed with the BLM's Draft EIS because it has omitted scoping committee -- scoping meeting, the invitation one that occurred on June 8th. And you don't print the scoping material comments, at all. You just categorize it. That's infuriating. That's not right because we don't have an opportunity to assess those."	The June 8, 2011 meeting was an Economic Strategies Workshop, which is discussed in the EIS in Section 1.8. Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project.
Donald Begalke	204h.2	SOC	"I think your primary and your alternate routes are self-serving because you state, in the DEIS, that you want to protect developers. Why? Why one group over another group? Why a small minority over a large majority of APS customers? Why, over all of the millions of people that use the Lake Pleasant Regional Park--"	Section 1.1.2 has been revised to detail the Arizona Corporation Commission process that led to the development of the Proposed Action route. Section 2.2 details the development of the alternatives. Sections 2.5.1, 2.5.2, and 2.5.3 explain the rationale for development of the Alternative 1, 2, and 3 routes, respectively.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Donald Begalke	204h.3	REC	"…all of the millions of people that use the Lake Pleasant Regional Park --They've had 1.5 million more last year. Yet, in the Draft EIS, you only reported a 2006 total. Quite a difference over six years."	In Section 3.10.6, 2010 data was used for visitation numbers, specific to Lake Pleasant Regional Park.
Donald Begalke	204h.4	NEPA	"BLM should not be involved in deciding the increase in the electric bills caused by a 500kV line and a 230 line. You should not be involved in a decision that should have been made in the community in October 20th, 2010."	BLM's purpose and need for action (and the legitimacy of BLM's role in the process) are clearly documented in Section 1.3. Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Donald Begalke	204h.5	SOC	"One very, very important part of the construction of the two lines north of State Route 74, is the cost, the very expensive cost of building high-powered transmission lines over a ten-lane-wide freeway that the Maricopa County Association of Governments plans for State Route 74."	The potential impact of widening SR 74 is considered in the cumulative impacts to socioeconomics in Section 4.19.11 and Transportation in Section 4.19.13. Given the estimated timeframe for the SR 74 expansion project (25 years or more in the future) any impacts to utility rates cannot be addressed quantitatively.
Donald Begalke	204h.6	SUP NA	"I prefer the no-action alternative…"	Statement of preference.
Donald Begalke	204h.7	NEPA	"…the decision should lie with the Corporation Commission, on deciding these important items will -- will fit customers, will fit recreationists, will fit educational opportunities for youth on the BLM lands adjacent to Lake Pleasant."	BLM's purpose and need for the project is clearly outlined in Section 1.3.
Harrianne Kopel	204i.1	SSS	"I would like to address the desert tortoise part of the program, seeing as the only time I've seen a desert tortoise was on the road, and it was not alive. I don't know how you delineate where you're going to prevent them from going across the road, but apparently they do."	Sections 3.16 and 4.16 provide information on the desert tortoise in the project area.
Merl Schafer	205a.1	SOC	"The power lines…run along the -- on the south side of 74. Then it crosses up over on the north side, runs along BLM land, and then drops back down south. Why would they do that? Because it's cheap. Because the BLM land will give them the …land for pennies on the dollar…they're going to…take the power line and put it on public land because they're too cheap to go ahead and…pay the private price... Why is the government competing, unfairly, against the BLM and the commercial -- the commercial land?"	The EIS already contains information about the cost of various alternatives in Sections 2.4, 2.5.1, 2.5.2, and 2.5.3.
Merl Schafer	205a.2	LU	"…on the BLM land, they're going to have to put in these maintenance lines, now, for their towers. But you're not allowed on that. This is public land, but you're not allowed. The public service company is going to be allowed to go out and maintain their towers. But don't you take your four-wheelers out there. Don't take your sand rails. Don't take anything out there. That's only for commercial company, not for the public. Although it's public land, and they're protecting this land for us."	More information on future maintenance activities has been added to Chapter 2 and recreational use allowed within the ROW has been clarified in the EIS. Additional recreation analysis and mitigation has been added to Section 4.9, including associated mitigation measures to reduce impacts.
Merl Schafer	205a.3	NEPA	"…we spent a lot of time here, last April, devising out all these other routes. And all of that was looked at by two independent groups, the environmental for the APS and the environmental for the government. And they all come up with the same thing. Nothing has changed. All of our ideas on all of that is put into the trash can, and they're doing what they want to do."	Section 2.7 explains that alternatives considered but eliminated from detailed analysis were developed in part through scoping meetings, then goes on to provide analysis of the ability of each alternative to meet the purpose and need for the project or the project objectives; or their technical and economical practicality and feasibility; or environmental reasonableness.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Merl Schafer	205a.4	NEPA	"Not a single thing changed from the last meeting. We drew 100 different maps, how they could reroute it, and all this other stuff. And you want to do it one more time? More input? What's the input for? What do you do with our input?"	Numerous routes and potential alternatives were reviewed and evaluated. Section 2.7 explains that the alternatives considered but eliminated from detailed analysis were derived from public scoping meetings.
Bonnie Carmin	205b.1	OPP SAR	"I have property on Cloud. And my house is only about from here to the wall from Cloud. And so, if they put those big towers down 211 and turn on Cloud, like the sub-alternative is, they will be in my back yard…the State Land doesn't want it to go anywhere else because it would ruin their value of their land. And it certainly would ruin the value of mine and also the aesthetic value…I just want them to know that going down Cloud is just not an option I can see because there's people that live all along there. That transmission line would be…less than 200 yards from our houses."	Statement of preference. No BLM land is involved in the Subalternative. The BLM decision on the proposed project would only apply to any BLM-managed public lands crossed by the proposed project and not land owned and managed by the Arizona State Land Department. The portion of the project that would affect people's homes on Cloud Road would not be on BLM-managed public lands and was proposed by the Arizona State Land Department.
Bonnie Carmin	205b.2	PH&S	"I'm also concerned about the health issues if that transmission line is that close to a subdivision, where we have horses and people."	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.
Ernest McCollum	205c.1	OPP PA	"They don't need this power transmission line. I don't know what the purpose of it is. They say they can't go down the existing power line. Why? Because, if there's an incident that creates a power outage on that line, then they still have this line. Well, if they're separated by 50 yards on the other power line --- I mean, the chances of lightning striking two times, right there in the same spot, is not very likely. So I don't understand why they can't use the existing power line that's running down there."	While redundancy is a consideration in the APS proposal, another consideration in the location of the transmission line is providing 230kV service in the north valley location, which could not be accomplished utilizing an existing ROW. Chapter 1 provides a description of the Background for this project.
Ernest McCollum	205c.2	WLF	"…the environmental impact on the wildlife coming through this -- and it's not just the BLM land; it's all this other land out there -- will affect the tortoises, the coyotes. And everything else is going to be affected out there. And the only thing they concentrated on was -- was the tortoises. But what about the other wildlife that's out there? They're going to be affected also."	Impacts to wildlife and associated habitat (including sensitive species and their habitat) are analyzed in Section 4.16.
Ernest McCollum	205c.3	LU	"APS comes along, all part of the government structure here, so they get to do what they want. But if I wanted to do something like that, if I wanted to put up a tower at my house with a windmill on it, I'd be told, "No," by the County Government because it's too high for the residential area, or something like that."	The fairness of local government or application of decisions is beyond the scope of analysis of the document.
Tom Wilcox	205d.1	SOC	"…Quintero Golf Club…has been ranked in the top 100 modern golf courses in the United States, by Golfweek Magazine, nine straight years. There are currently 15 residences. They are all owned and occasionally occupied, I'd say. It's mostly snowbirds. There is other construction preparing to go forward. Part of the selling point of all of this -- And there's over 100 million in this project already. Part of the selling point has been the pristine nature of the surroundings, being surround by BLM land."	Statement of opinion.
Tom Wilcox	205d.2	VIS	"…when I get past Castle Hot Springs Road, all I see is native, beautiful Arizona desert. And to see these 150-foot-high towers running along one of the few stretches of highway, anywhere in metro Phoenix area, be ruined by this type of a -- of a look, I think, would be an absolute crime."	The impact of the proposed transmission line on visual resources, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
Tom Wilcox	205d.3	WLF	"…two days ago, I saw two bobcats just flouncing across one of the fairways. Concerned for that kind of wildlife. Coyote. We've seen fox. Obviously, javelinas. Skunks, unfortunately. But beautiful wild birds and everything else."	Impacts to wildlife and associated habitat (including sensitive species and their habitat) are analyzed in Section 4.16.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Tom Wilcox	205d.4	VIS	"It is an absolute pristine environment. And I, for one, personally -- as well as on behalf of my property owners, on behalf of my club members, and on behalf of the public that play our golf course -- would hate to see the experience ruined by this type of a happening on the way in."	The impact of the proposed transmission line on visual resources, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
John Thomson	205e.1	WLF	"…how many hawks and falcons do they expect to die on those poles?"	BMPs to address this concern are listed in Appendix 2A and potential impacts to raptors are analyzed in Section 4.16.
John Thomson	205e.2	SDA	"And how come they are not going underground? … Don't tell me they're not going to make their money back. It's just going to take them a little bit longer."	Section 2.7.10 explains why Undergrounding the proposed transmission line was not carried forward for detailed analysis.
John Thomson	205e.3	SOC	"…where I bought, when it was high. I paid a lot of money for that piece of property…A lot of money. The one -- for an acre and a quarter. And now I'm going to see it go down from 20, 25, to 29 percent, after the -- you know, after -- during the recession. This is a nightmare."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.
John Thomson	205e.4	VIS	"It's not only going to go in front of my house, on the side of my house, where my view is; I get to see it to the west and to the north of where I am."	The impact of the proposed transmission line on visual resources is analyzed in Section 4.14.
John Thomson	205e.5	NEPA	"And I'd like to know what happened to the going over -- over the CAP, okay, or even under the CAP? What happened to that? That's -- they had all the easements for that."	Section 2.7.4 explains why the CAP Complete route was not carried forward for detailed analysis.
Richard Stallings	205f.1	PH&S	"High-voltage lines are --are not fit for humans to live close to. The -- I live on Cloud Road. And I'm going to have a power line, right there, 100 feet from my house, because the easement is only 200 feet wide. So they can put it 100 feet from my property line, close to my house."	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.
Richard Stallings	205f.2	NEPA	"Why…did they change the routing from the original designed-by-APS route, down the CAP Canal, the easement there, to somewhere where it had to pass through BLM land?"	Section 2.7.4 explains why the Cap Complete route was not carried forward for detailed analysis.
Richard Stallings	205f.3	SOC	"What's the difference in the price of this proposal and the previous proposal that this changed from, and who's going to pay the difference? … There was some proposal, going along the CAP Canal for part of the way and the existing utility right-of-way. There's three power lines on it now or four? …And what's the difference in the cost? The one that's more direct to the Morgan Substation, Sun Valley, what's the difference in cost, going that way and then this way, and who's going to pay that difference?"	The cost of the alternatives analyzed in the EIS are provided in Chapter 2, along with the cost of each alternative considered but eliminated from detailed analysis (Section 2.7).
Daisy Anderson	205g.1	VIS	"I bought, out in Wittmann, so I would have beautiful sunsets. And I drive home, Happy Valley, and I see these beautiful 20, 30, whatever they are, K lines in the sunset. And I just go, 'My gosh. If that's coming to my back yard, I just don't know what I'm going to do.'"	The impact of the proposed transmission line on visual resources is analyzed in Section 4.14.
Daisy Anderson	205g.2	SOC	"I'm a realtor. I sell the beauty of the sunset. And now I have to sell the beauty of the sunset in the transmission lines? And you already paid for your property. And I'm going to have to sell it."	The impact of the proposed transmission line on visual resources is analyzed in Section 4.14. Mitigation measures for impacts to visual resources are provided in Section 4.14.4.
Kristina Jauch	205h.1	VIS	"I just moved here, not that long ago, to Wittmann, for the beautiful views. I do not want to see high power lines."	The impact of the proposed transmission line on visual resources is analyzed in Section 4.14.
Kristina Jauch	205h.2	SOC	"And, now I've moved to Wittmann, and I find out: Yea, I get to deal with the corporate commission ruining my new property, based on high power lines."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Kristina Jauch	205h.3	SDA	"And, again, it's the year 2012. You can't put the power lines underground?"	Section 2.7.10 explains why Undergrounding the proposed transmission line was not carried forward for detailed analysis.
Roxann Carlson	205i.1	PH&S	"I know, for a fact, EMFs cause cancer. We -- I have personally purchased an EMF detector. You put it next to your microwave. And they tell you, 'Don't stand next to your microwave.'"	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.
Roxann Carlson	205i.2	VIS	"I came out here to live in this beautiful desert."	The impact of the proposed transmission line on visual resources is analyzed in Section 4.14.
Walter Zahlmann	205j.1	OPP FL	"My argument here…is that BLM land should never be used for commercial -- corporations."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Walter Zahlmann	205j.2	SOC	"If you're going to move the line for a private corporation worth millions of dollars, then you can bury the lines to protect your values and your homes."	Section 2.7.10 explains why Undergrounding the proposed transmission line was not carried forward for detailed analysis.
Susie Waggoner	205k.1	VIS	"Go underground. There is no reason to disrupt the beauty of Carefree Highway…"	Section 2.7.10 explains why Undergrounding the proposed transmission line was not carried forward for detailed analysis.
Susie Waggoner	205k.2	VIS	"…I drive home and I come down Carefree Highway and I look at that standing beautiful highway full of the saguaros. And, as the sun sets, I pull over and take pictures because it is beautiful. And to desecrate that is disgusting."	The impact of the proposed transmission line on visual resources, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
Susie Waggoner	205k.3	PH	"I live right here. There is no reason I didn't hear from you before that. If your community outreach is in the paper, who the hell reads the paper? I'm not 90. I do everything online. The Arizona Republic charges you to read their stuff online now. That's disgusting. Shame on you for not reaching out to the community that it's going to impact."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notifications for public hearings were legally adequate.
Susie Waggoner	205k.4	OPP RMPA	"…when I heard, earlier, that this is not conforming to BLM, if it's not conforming, it's for a reason it doesn't conform. That's because it's not for the betterment of the land."	Statement of preference.
Susie Waggoner	205k.5	SDA	"Bury it. Bury that damned power line."	Statement of preference. Also, Section 2.7.10 explains why undergrounding the proposed transmission line was not carried forward for detailed analysis.
Ladona Stallings	205l.1	PH&S	"…my main issue is I live on Cloud Road. That's my home. And this is going to go right in front of me. And, beyond how it's going to look, I am extremely concerned about my health…If you put that there, then my house is absolutely worthless to me. I think, if you're going to do that, you should condemn the property and pay for everybody's out there, that you're going to run this by, because you're putting them at risk in their health."	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.
Ladona Stallings	206a.1	EJ	"…the proposed line is -- line is favored because it's going away from the high-end Vistancia community in north Peoria. So that tells me that those of us that are going to have it in our neighborhood aren't high-end or important enough…If you're rich enough, a big corporation, got political influence, then it gets moved away from you. And then those of us who can't fight it are just left out in the cold because we're not important."	Section 4.10 of the EIS has been revised to clarify socioeconomic and environmental justice impacts, and the relative proportion of impacts across communities.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Glen Collins	206b.1	SUP PA	"So I believe the BLM should issue this transmission line right-of-way on the proposed route. I believe that the 1967 line is an example of what will happen. The new power line will blend into the landscape of the new urban area. And our great-grandchildren, if they notice it, will accept it as a necessary support for their urban lifestyle."	Statement of preference.
Franklin Schiller	206c.1	SR74	"I submit to you that the precedent has already been set. You have Route 74 going, smack-dab, right down the whole line of that. That's already in there. I think it is beneficial to understand that everything has been done to try to minimize that effect by paralleling this existing disturbance going through the land."	Statement of opinion.
Tiffany Sprague	206d.1	OPP PA	"I am astounded and, frankly, quite disappointed that the BLM has selected a preferred alternative that would allow this transmission line to be built on public lands, especially because, in the Resource Management Plan, it was determined that utility corridors were inappropriate for this area."	Statement of preference.
Tiffany Sprague	206d.2	OPP RMPA	"It took years for the BLM to develop the Resource Management Plan. But less than two years after it was published, they're willing to roll over and accept the first proposal to -- to develop this area."	Statement of preference.
Tiffany Sprague	206d.3	SUP NA	"I urge the BLM to choose either the no-action alternative or another alternative that would not allow these lands to be developed."	Statement of preference.
Walter "Skip" Zahlmann	206e	UC	Content unrelated to analysis	
Don Steuter	206f.1	LU	"Usually, when an area gets developed, when there's a -- there's a project, a development of some sort, the threat, the danger, is that, eventually, the Bureau of Land Management loses interest in its lands. It becomes difficult to manage, for a variety of reasons."	The EIS Table 1.5-1 explains the decisions to be made, and these decisions are specific to the future use of the public lands managed by the BLM.
Don Steuter	206f.2	VIS	"In 1993, Maricopa County convened a scenic-corridor task force…to take a look at Highway 74 and see what kind of recommendations we could come up with to preserve this corridor…74 was always a place that, when people from out of state came to visit me, it was one of my go-to places. I'd take them out along beautiful Highway 74, out towards Wickenburg, and show them some nice desert and show them what a nice place that we live in."	The impact of the proposed transmission line on visual resources, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
Don Steuter	206f.3	LU	"You're talking now about a half-mile-wide corridor to the north of Highway 74. I mean, that's as big a red flag as you can put out in front of somebody like -- like us. I mean, that half-mile-corridor is going to - is going to end up getting developed."	Changes in management of the BLM lands proposed in conjunction with the project are addressed in Table 1.5-1 and are analyzed throughout Chapter 4. The proposed management changes that would occur under the Proposed Action/Preferred Alternative include establishing a 200-foot wide single-use utility corridor north of SR 74, which would not allow for any additional development. The alternative multiuse corridor evaluated under Alternative 1(described in Section 2.5.1) would allow for additional future development within the corridor. Further, there is already an established 1/2-mile wide transportation corridor in this area.
Walter "Skip" Zahlmann	209.1	SSS	"FOR THE DESERT TORTOISE…IS THE BLM DEMANDING THE REQUIREMENT OF APS to purchase at least 600 acres…"	Mitigation measures specific to Sonoran Desert Tortoise specify procedures for compensation of habitat loss in Section 4.16.3.1 of the EIS.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlmann	209.2	SSS	"…common sense will tell you that on the south side of Rte. 74…there has to be desert tortoise…"	Impacts to wildlife included desert tortoises, and associated habitat (including sensitive species and their habitat) are analyzed in Section 4.16.
Walter "Skip" Zahlmann	209.3	INFO	"THIS IS A FORMAL REQUEST FOR COPIES OF THE ENVIRONMENTAL STUDIES CONDUCTED BY THE CITY OF PEORIA REGARDING DESERT TORTOISE…THIS IS A FORMAL REQUEST FOR COPIES OF THE STUDIES MADE BY APS REGARDING THE DESERT TORTOISE…THIS IS A FORMAL REQUEST FOR COPIES OF THE STUDIES MADE BY STATE LANDS BEING USED REGARDING THE DESERT TORTOISE…"	Request for information beyond the scope of the BLM.
Walter "Skip" Zahlmann	209.4	PH	"NEW HEARINGS MUST BE HELD…"	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notification for public hearings were legally adequate.
Walter "Skip" Zahlmann	209.5	SOC	"Loss of property values between 29 and 40% being given from another congressman as the correct figure..Never once discussed in an open hearing with the people who will be affected."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.
Walter "Skip" Zahlmann	210		Same exact letter as #115, just resubmitted	
Walter "Skip" Zahlmann	211	UC	Content unrelated to analysis	
Laura Saxon Morriston	212.1	PH	"Hold a new Public Hearing and Extended Comment Period. Due to inadequate notification for the public hearing of the Proposed APS Sun Valley to Morgan 500/230KV Transmission Line Project of December 12, 2012, at Nadaburg School and newly discovered information since that meeting, the residents of the area that will be impacted by this project find it absolutely necessary another public meeting be held. Our concerns that have not been addressed are as follows: 1. Improper notification of Wittmann, Circle City, and Morristown residents."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notifications for public hearings were legally adequate.
Laura Saxon Morriston	212.2	INFO	" Our concerns that have not been addressed are as follows: 2.Continued refusal to provide Freedom of Information requests"	No formal FOIA requests were submitted.
Laura Saxon Morriston	212.3	PH&S	" Our concerns that have not been addressed are as follows: 3. Long range effects of Health and Safety"	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.
Laura Saxon Morriston	212.4	SOC	" Our concerns that have not been addressed are as follows: 4. Decrease of property values throughout the areas"	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.
Laura Saxon Morriston	212.5	WLF	" Our concerns that have not been addressed are as follows: 5. Unnecessary disruption of Endangered Species"	Impacts to wildlife and associated habitat (including sensitive species and their habitat) are analyzed in Section 4.16.
Laura Saxon Morriston	212.6	LU	" Our concerns that have not been addressed are as follows: 6. Conservation of pristine BLM land"	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Walter "Skip" Zahlmann	213	UC	Content unrelated to analysis	

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter "Skip" Zahlmann	214	UC	Content unrelated to analysis	
Trent Franks, Ed Pastor, Paul Gosar, Ann Kirkpatrick, David Schweikert, Ron Barber, Matt Salmon, Kyrsten Sinema	226.1	SUP PA	"We are writing in support of the Bureau of Land Management (BLM) selection of the Proposed Action as the Agency Preferred Alternative…"	Statement of preference.
Trent Franks, Ed Pastor, Paul Gosar, Ann Kirkpatrick, David Schweikert, Ron Barber, Matt Salmon, Kyrsten Sinema	226.2	GEN	"The Proposed Action establishes multi-use within the State Route 74 Designated Corridor; reduces potential transmission congestion and increases important redundancy and reliability of the electric grid around the Phoenix metropolitan area; expands opportunities for renewable energy use; and provides critical support and protection in the event of a natural disaster or threat to our national defense."	Statement of preference.
Trent Franks, Ed Pastor, Paul Gosar, Ann Kirkpatrick, David Schweikert, Ron Barber, Matt Salmon, Kyrsten Sinema	226.3	LU	"We further stress that only the Agency Preferred Alternative (Proposed Action) is consistent with the local governmental plans including those of the City of Peoria, Arizona…"	The EIS evaluates the consistency of the EIS decisions with local government plans in several sections of Chapter 4, including Sections 4.6 and 4.14. The information contained in this comment is consistent with information provided in the EIS.
Priscilla Storm	234.1	INFO	"Are these in the DEIS? Can you please help me find them? If not, can you tell me what the acreage is-X,2? Miles around the Alternatives, put must be some overlap. Impacts are written as a % of carpus types of land within the Study Area."	Joe Incardine responded on 1.22.13 via email with partial responses. Other responses in EIS.
Priscilla Storm	235.1	INFO	" ah-hah, found it - correct? Mapped?"	Discussion in provided in Chapter 2 of the EIS.
Thomas C Zimmerman	236.1	GEN	"The BLM's (preferred) 'Proposed Action' route for SV-M and the 'Alternate-1' route are identical routes on BLM-managed lands North of State Route 74, and are equally the longest routes and most expensive routes to build. The corridor widths are the only difference, and why 'Alt-1's' is 1/2 mile wide is very scary and the Draft wrongly provides no fill-in details."	Section 2.5.1of the EIS explains Alternative 1 in detail, including the rationale for the alternative.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Thomas C Zimmerman	236.2	SOC	"The Draft provides that SR74 will become a 10-lane freeway, and deliberately omits the costs for two required very, very expensive 'safety structures' that must be built for high-voltage lines to cross a freeway. Additionally, as freeways in Az. Are constructed in stages, BLM fails to provide the additional construction costs for one time, two times, three times or …additional constructions - ??"	The potential impact of widening SR 74 is considered in the cumulative impacts to socioeconomics in Section 4.19.11 and Transportation in Section 4.19.13. Given the estimated timeframe for the SR 74 expansion project (25 years or more in the future) any impacts to utility rates cannot be addressed quantitatively. APS has planned for the location of the transmission line to essentially be situated outside of the proposed future SR 74 road expansion area based upon known information at this time. The transmission line structures at the crossings of SR 74 could potentially need to be moved in the future depending upon the ultimate design and build out of the SR 74 expansion.
Thomas C Zimmerman	236.3	SOC	"For the P.A. and the Alt-1 routes, the construction costs' factors are 1.25 to 1.30. Will electric rate increases be 12.50%, 13.00% or how high?"	Section 4.10 has been updated to include how APS increases rates and whether it would depend upon which alternative is selected.
Thomas C Zimmerman	236.4	SOC	"Two routes in the Draft are "Alternate-2" and "Alternate-3", both South of SR74, not on BLM lands, not crossing a freeway twice, not requiring special structures, not as long as the expensive BLM "P.A." and "Alt.-1". The constructions costs' factors are 0.99 and 1.00. Electric rate increases might be 10.00% or lower. Electricity users reimburse the utility for all construction costs, and those reimbursements are rate increases on businesses, governments, school districts, residents, civic/social organizations and other-affected ratepayers."	Section 4.10 has been updated to include how APS increases rates and whether it would depend upon which alternative is selected.
Thomas C Zimmerman	236.5	SAAA	"We do not want either of BLM's expensive routes having highest construction costs' factors. All parties agree SV-M is needed, but should be constructed at reasonable costs. BLM can only recommend either "Alt.-2" or "Atl.-3"."	Statement of preference.
Thomas C Zimmerman	236.6	SUP NA	"Thus, BLM's fifth option in the Draft is the "No Action Alternative", and that is the preferred outcome on your Sun Valley-Morgan EIS process for the Public, for businesses, for local and Az. State governments, for school districts, for residents, for civic/social organizations and for other-affected ratepayers. Also, the "No Action Alternative" solution is chosen by business-taxpayers, employee-taxpayers and their families and all other taxpayers regarding the SV-M Line issue, and our taxes are paid to the federal government plus State and local governments, too."	Statement of preference.
Thomas C Zimmerman	236.7	SUP NA	" Finally, many, many "positives" are on the BLM-managed Public Lands North of SR74. Keep them all undisturbed, and on track!!	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Thomas C Zimmerman	236.8	SUP NA	"BLM's mission for the Public is to manage and protect the Public Lands and all forms of life."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Thomas C Zimmerman	236.9	SUP NA	" If "Mother Nature" had a voice, she would tell the BLM that the Final EIS decision on Sun Valley-Morgan would be "No Action Alternative"!!!!!!!!!!!!!"	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Priscilla Storm	237.1	INFO	" Is this correct interpretation of how DEIS impacts of transmission line on adjacent land are represented? 1. ROW is 200' wide 2. There are 5,280 linear ft in mile 3. There are 43,560 sq ft in acre 4. Each mile is 24.24 acres of ROW 5. Transmission line could undulate between edges of ROW 6. DEIS states impacts to adjacent uses greatest 200' from transmission line 7. DEIS inference is that impact area is 400' (if line is in middle of ROW + 200') 8. To be conservative, the zone of most direct, (from DEIS perspective)high impacts to adjacent area and land use is 600' (transmission line moves within 200' ROW, including to ROW perimeter) Is this what you intended the reader to discern? If I am wrong, can you clarify, thanks"	Joe Incardine provided info to commenter on 1.22.13 via email.
Priscilla Storm	238.1	INFO	"If ROW undulates to keep transmission line more or less in the center of the 200', that could create isolated land fragments too. Different scenario than if ROW is basically straight and parallel or abuts property line and transmission micro-siting has line undulating with ROW."	Discussion is provided in Chapter 2 of the EIS on why undulation might occur due to micro-siting efforts and attempting to minimize potential impacts.
Jack Sasser Mary Oliver Sasser	239.1	SUP PA	"We reside in the Vistancia Trilogy neighborhood and we fully support your preferred alternative, the Certificated Route/North of State Route 74."	Statement of preference.
Trina and Wayne Fredrickson	240.1	OPP SAR	"Please accept this letter as our written objection to any transmission line being constructed along Cloud Road."	Statement of preference.
Trina and Wayne Fredrickson	240.2	PH&S	"We are very concerned about the potential health hazards that the transmission lines would cause to ourselves, our neighbors, and our pets and livestock."	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.
Trina and Wayne Fredrickson	240.3	NOISE	"Our other concerns are with regard to the noise that will be created by these large transmission lines and our property values."	The impacts from and mitigation of noise generated by the proposed transmission line are analyzed in Sections 4.7.2.1 of the EIS. Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values.
Trina and Wayne Fredrickson	240.4	SOC	"Our property values would continue to plummet, going from bad to worse!"	The EIS analyzes impacts to private property values in Section 4.10.
Trina and Wayne Fredrickson	240.5	SUR	"If anything, our preference is that the lines be constructed further out on the School Trust Land and closer to Highway 74."	Statement of preference.
Tim Kasovac	241.1	PH	"On P.1-17 your Table 1.7.1 "Formal Scoping…" does not include the June 8, 2011 5:30-8:00PM scoping meeting which included a representative of the Az. St. Land Dept., the Manager of the Lake Pleasant Regional Park, a spokesman for the Sierra Club and numerous members of the Public."	The June 8, 2011 meeting was an Economic Strategies Workshop, which is discussed in the EIS in Section 1.8. Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Tim Kasovac	241.2	SOC	"More severely showing the BLM bias against the Public is the Economic Strategies Workshop's (P.1-18) and in Table 1.8.2 (P1-19) statement amending the RMP 'would benefit developers.'"	Table 1.8-2 provides a summary of issues from Scoping, which includes the Economic Strategies Workshop. The issue referenced by this comment is that the process of amending the RMP should consider whether or not it is appropriate to amend the RMP in such a way that would benefit developers. The referenced text is stating the issue as it was raised during scoping and is not expressing bias against the public on the part of the BLM.
Tim Kasovac	241.3	PH	"BLM did not have a workshop for Maricopa County Taxpayers who fund Lake pleasant Park where over 1.5-million folks have enjoyed themselves 2011, thanks to our Public and the BLM's cooperation for over 58 years."	Maricopa County taxpayers were invited to and welcome at any of the formal scoping meetings listed in Table 1.7-1 of the EIS. Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of public hearings were legally adequate.
Tim Kasovac	241.4	LU	"Industrializing the vicinity near the BLM lands, buffering the Park's entrance and lands westward along SR74, shows us that BLM's words are broken."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Tim Kasovac	241.5	SOC	"Also, BLM did not have a workshop for APS Customers who will pay for Sun Valley-Morgan as electric rates will increase. We are APS electric-bill payers and rising rates should not be decided by the BLM. Rates will increase much more if the Proposed action or Alternate-1 is BLM's decision, and the ACC's political decision on SV-M will remain; ACC set up BLM politically. BLM will hurt the Public ratewise because the Proposed Action/Alternate 1 already are too expensive for SV-M."	Section 4.10 has been updated to include how APS increases rates and whether it would depend upon which alternative is selected.
Tim Kasovac	241.6	SOC	"BLM missed Proposed Action/Alternate-1 additional millions in APS costs for crossing SV-M over the '10-lane wide freeway' SR74 will become as reported in the Draft - 20+ lanes wide for medians, shoulders, freeway lanes and spaces for the required safety structures. Since APS will have to return for constructions as the freeway will be built in stages, millions, millions more, in costs APS will have. The Proposed Action and the Alternate-1 are way too costly."	The potential impact of widening SR 74 is considered in the cumulative impacts to socioeconomics in Section 4.19.11 and Transportation in Section 4.19.13. Given the estimated timeframe for the SR 74 expansion project (25 years or more in the future) any impacts to utility rates cannot be addressed quantitatively.
Tim Kasovac	241.7	SUP NA	"We respectively select BLM's 'No Action Alternative' to be the Final EIS decision on SV-M."	Statement of preference.
Walter 'Skip' Zahlmann	244	UC	Content unrelated to analysis	
Walter 'Skip' Zahlmann	245.1	SSS	"be that these desert tortoises and their habitat are protected----------legally and by the Federal Government-------and that one could clearly argue that they live and have habitat on both sides of Rte 74----be it land protected by BLM----or land the City of Peoria wants to have commercially developed-- ----------YOU--THE BLM MUST HAVE TAKEN INTO CONSIDERATION THESE PROTECTED TORTOISES AND THEIR HABITAT----------AS THE LAND USE BY APS HAS OPTIONS FOR BOTH SIDES OF THIS RTE 74"	Impacts to wildlife and associated habitat (including sensitive species and their habitat) are analyzed in Section 4.16.
Walter 'Skip' Zahlmann	245.2	SSS	"Again if the BLM allows the use on the north side----------which you once rejected-------- ----are you and the BLM suggesting that the desert tortoise will just have to pack up and walk across this 10 lane hi-way only to find the same reception across the street on the south side and completely paved over.???? So the BLM is considering destroying the desert tortoise and its habitat ----------ON BOTH SIDES NORTH AND SOUTH----------OF RTE 74"	Impacts to wildlife, including desert tortoises, and associated habitat (including sensitive species and their habitat) are analyzed in Section 4.16.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Walter 'Skip' Zahlmann	245.3	SSS	"yet now that the APS wants to use this land----------and a far greater amount, running some 9 miles on the north and south side of Rte 74-there is no damage to these desert tortoises and their habitat????? And at the same time you KNOW--the BLM KNOWS-----THAT THE LAND ON THE SOUTH SIDE, will totally destroy the desert tortoise and its habitat on the south side in the years to come----------SO THERE WILL BE NO DESERT TORTOISE ON EITHER SIDE OF RTE 74 IN THE YEARS TO COME. YOU JOB AND THAT OF THE BLM IS TO PROTECT THESE FEDERALLY PROTECTED TORTOISES AND THEIR HABITAT----------AND KNOWING WHAT YOU KNOW---------- YOU ARE LEGALLY REQUIRED TO PROTECT THEM----------"	Impacts to wildlife, including desert tortoises, and associated habitat (including sensitive species and their habitat) are analyzed in Section 4.16.
Micah Rasner	246.1	OPP SAR	"I have a home on Caravaggio, which is the next road over from Cloud. I have just learned about this proposed high line, high tower, utility crossing down, proposed apparently, right down Cloud Road, which is just north of my house. I have great opposition to this…"	Statement of preference.
Robert and Linda Lindgren	264.1	SR74	"I live in Trilogy at Vistancia and I agree and support the power lines being put were they are to be located in the 7 mile corridor along SR74."	Statement of preference.
John Cacciato	265.1	OPP ALT3	"I am a resident of Trilogy and like other residents am opposed to have the proposed power lines running through the native desert north of Vistancia."	Statement of preference.
John Cacciato	265.2	SR74	"I am in favor of using the route along SR74."	Statement of preference.
Karla Wilson	266.1	SUP PA	"I still prefer the Proposed Action, with the 200-foot wide right-of-way and single use corridor within the Arizona Corporation Commission certificated route. I understand that the RMP would need to be amended. The lines should go north of the 74 highway."	Statement of preference.
Jack S. Tuber, D.O.	267.1	SAAA	"This letter is addressing the change in siting of the proposed Sun Valley to Morgan 500/230kV Transmission Line Project. It was originally to be placed south of SR-74 and this is still the most appropriate siting for this line."	Statement of preference.
Jack S. Tuber, D.O.	267.2	OPP RMPA	"…only two years ago, the Resource Management Plan determined that siting the transmission line north of SR-74 was 'inappropriate' due to the negative impacts it would have."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need. Chapter 1 also describes why an RMP amendment is needed.
Jack S. Tuber, D.O.	267.3	SOC	"Furthermore, the 'northern' route for the transmission line would increase costs for Arizona Public Service Company rate payers which includes me."	Section 4.10 has been updated to include how APS increases rates and whether it would depend upon which alternative is selected.
Jack S. Tuber, D.O.	267.4	SOC	"It appears as though the BLM is considering and approving what is in the best interest of a single developer who will substantially gain financially from the proposal."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Jack S. Tuber, D.O.	267.5	SUP NA	"I strongly recommend that the BLM…select the No Action Alternative…"	Statement of preference.
Jack S. Tuber, D.O.	267.6	OPP RMPA	"Do not amend the RMP…"	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Ladona Stallings	288	INFO	Left voice message with personal information, so she could be included on the Project Mailing List.	Provided information was included in the Project Record and added to the Mailing List.
Theodore Karsen	300.1	SUP PA	"I want to formally support the proposed APS power lines slated for BLM route along north side of SR74"	Statement of preference.
Vicki Fredrickson	310.1	SUP PA	"I am writing to express my support to allow APS to run their power lines along the 7-mile corridor on the north side of SR74."	Statement of preference.
John Stephens	311.1	SUP PA	"I just wanted to let you know that my wife and I strongly support the BLM decision to locate the proposed APS power line along SR 74."	Statement of preference.
Mark Shreffler	313-1	OPP PA	"Let the BLM stand firm in protecting the public land north of 74."	Statement of preference.
Mark Shreffler	313-2	LU	"And please consider relaxing overly regulated rules of clearing land along the route. A right-of-way so absurdly wide seems wasteful. I have seen a photograph of a harmless saguaro cactus chopped down 70%."	Appendix 2B, corresponding text in Chapter 2, and analysis related to vegetation management in Chapter 4 have been revised to specify management of saguaro cactus in the ROW in conjunction with construction, as well as ongoing maintenance activities.
Michael & Susan Barrena	325.1	SUR	"We support the proposed route for the power lines in Peoria, AZ through BLM land."	Statement of preference.
Candace Hitchcock	326.1	SUP PA	" I am writing you to indicate my support for the agreed upon APS power line route on BLM land along the north side of SR74. This would keep the proposed power lines out of the native desert north of Vistancia."	Statement of preference.
Wayne Hitchcock	327.1	SUP PA	" I am writing you to indicate my support for the agreed upon APS power line route on BLM land along the north side of SR74. This would keep the proposed power lines out of the native desert north of Vistancia."	Statement of preference.
Niki and Betty Shrode	328.1	SUP PA	"My wife and I strongly support the placing of the APS Power lines on BLM property adjacent to SR74. They belong along the public right of way not through or close to or in view of residential developments."	Statement of preference.
Kate Waite	329.1	SUP PA	"I just want to add my complete support for the selected route along the north side of SR74. As National Project Manager for the proposed APS power lines, I want to convey my agreement with the final proposed APS power lines along the seven miles corridor of SR74. This plan will keep the power lines out of the native desert north of Vistancia."	Statement of preference.
Martin and Jo-Ellen Hirsch	330.1	SR74	" We support the 7 mile area along SR74 designated for power lines"	Statement of preference.
Neeta Steinbrook	331.1	SR74	"This email is to support keeping the proposed power lines on the BLM land along highway 74..... We are residents of Trilogy at Vistancia and adamantly oppose power lines near residential areas.	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Roger Forsyth	332.1	SUP PA	" I would like to provide my support for the APS Sun Valley to Morgan Transmission line on BLM land north side of SR74."	Statement of preference.
Bertina Wright and Jim Finch	333.1	SR74	"I live in Trilogy at Vistancia and am writing you to tell you of our support for the line to run through the land owned by the BLM along SR74."	Statement of preference.
Walter Skip Zahlmann	335	UC	Content unrelated to analysis	
Walter Skip Zahlmann	336	UC	Content unrelated to analysis	
Niki and Betty Shrode	363.1	SR74	"My wife and I strongly support the placing of the APS Power lines on BLM property adjacent to SR74. They belong along the public right of way not through or close to or in view of residential developments."	Statement of preference.
Neeta Steinbrook	364.1	SR74	"I am a resident of Trilogy at Vistancia and I adamantly oppose the placement of the proposed power lines anywhere near residential areas. I support the proposed route along highway 74 on BLM land. We here at Vistancia are united in our continued fight to keep these power lines away from our homes!"	Statement of preference.
Wayne Hitchcock	387.1	SUP PA	" I am writing you to indicate my support for the agreed upon APS power line route on BLM land along the north side of SR74. This would keep the proposed power lines out of the native desert north of Vistancia."	Statement of preference.
Candace Hitchcock	388.1	SUP PA	" I am writing you to indicate my support for the agreed upon APS power line route on BLM land along the north side of SR74. This would keep the proposed power lines out of the native desert north of Vistancia."	Statement of preference.
Nicholas Enoch, Lubin & Enoch, P.C.	389.1	SUP PA	"…we support the BLM's Preferred Alternative, as identified in the Draft Environmental Impact Statement for the proposed Sun Valley to Morgan Project."	Statement of preference.
Nicholas Enoch, Lubin & Enoch, P.C.	389.2	SOC	"IBEW Local 769 believes that the BLM's prompt adoption of the ACC's proposed alignment will be a helpful step in addressing one of Arizona's largest ongoing problems, to wit, creating good jobs. With Arizona's unemployment rate hovering around 8% (see Bureau of Labor Statistics: Economy at a Glance, http://www.bls.gov/eag/eag.az.htm, last visited Jan. 14, 2013), the proposed project will put Arizonans to work in fairly short order on a substantial infrastructure project that will both directly and indirectly create jobs here in Arizona."	Impacts to Socioeconomics, including employment in Arizona, are contained in Section 4.10.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Nicholas Enoch, Lubin & Enoch, P.C.	389.3	LU	"By way of example, stakeholders, including the City of Peoria, City of Surprise, Town of Buckeye, Maricopa County, state agencies, federal elected officials, APS and large master-planned communities have supported the ACC-approved route as being the most consistent with existing land use and infrastructure plans, such as Peoria's General Plan, which are in place. In the estimation of IBEW Local 769, the ACC-approved route approximately co-locates the proposed power line with an existing and approved Transportation Corridor, minimizing necessary environmental disturbance."	Statement of preference.
Carl Pennella	390.1	SUP PA	" As a resident of Trilogy I support the power lines run north of SR74."	Statement of preference.
Cindy Hagen	391.1	SUP PA	"As a resident of Trilogy, I support the decision for the APS power lines to be located north of Vistancia along SR74. This is the best solution to help preserve the natural beauty of the desert and enhance future development of the area."	Statement of preference.
David W. Grounds, Dorn Homes, Inc.	392.1	SOC	"I am writing to contest the Bureau of Land Management's position that high voltage transmission lines do not have a severe negative impact on the marketability and value of residential home sites. Additionally, I am challenging the Bureau's willingness to honestly assess the negative cost implications to land owners with close proximity to high voltage power lines. I have 40 years of empirical evidence to ground my assessment."	Section 4.10 analyzes potential impacts on property values from all alternatives.
David W. Grounds, Dorn Homes, Inc.	392.2	SOC	"…lots that aren't adjacent or viewing the power lines have $26,500 to $39,500 more value than the power line lots. This is at least a 65% devaluation on land values due to power lines."	The information provided by the commenter cannot be considered on par with the independent studies of property values in certain geographic areas contained in the literature review in Appendix 3A. Further, Section 4.10 analyzes potential impacts on property values from all alternatives.
David W. Grounds, Dorn Homes, Inc.	392.3	SOC	"In addition to massive discounts and land devaluation caused by high voltage electric lines, there are the carrying costs to developers. If the Bureau will take the time to assess the cost of capital to carry lots, it is staggering. Costs include real estate taxes, HOA dues, maintenance, use of capital, etc. The totals are in the thousands of additional dollars of losses per lot."	The information provided by the commenter cannot be considered on par with the independent studies of property values in certain geographic areas contained in the literature review in Appendix 3A. Further, Section 4.10 analyzes potential impacts on property values from all alternatives.
David W. Grounds, Dorn Homes, Inc.	392.4	OPP ALT2/3	"We are opposed to Alternative 2 and Alternative 3 as they go through private land rezoned for Residential Subdivisions within Master Plans."	Statement of preference.
David W. Grounds, Dorn Homes, Inc.	392.5	SUP PA	"We support the Proposed Action, which the ACC approved and is generally consistent with BLM's Preferred Alternative."	Statement of preference.
David W. Grounds, Dorn Homes, Inc.	392.6	SOC	"The Dept. of Interior is stating (and citing studies) that there is no lot price differential or home price differential between residential subdivision lots adjacent to high voltage transmission lines and those that are not. However, the fact that the difficult to sell lots are absorbed by the overall project and the full cost differential between the impacted and non-impacted lots is not reflected in the sales price."	The literature review in Appendix 3A was revised to include new empirical studies, and Section 4.10 was revised to clarify that the value of lots adjoining a ROW would be affected.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David W. Grounds, Dorn Homes, Inc.	392.7	SOC	"Other Considerations when dealing with High Voltage Power Lines: 1. Larger lots need to be created to accommodate greater on-lot setbacks and increase the distance between home and unattractive element. Large lots next to transmission lines are often sold for the same price as small lots. 2. More master developer and homebuilder marketing expenses are required to favorably position lots in less desirable locations within the subdivision. 3. Reductions in lot premiums and bonus or discounts in home upgrades to incentivize sale of challenging lots. 4. Carrying costs, interest expense on portion of debt associated with lots which do not move quickly, where there is slow absorption or velocity; lots next to unsightly areas sell last in the project and there is an associated interest expense with holding these lots until they sell. 5. Delay in construction and occupancy of these homes and associated delay in development fees and sales and property taxes which are realized when the lots are sold, homes are constructed and occupied. Homes not adjacent or in proximity to undesirable, intrusive or unsightly land uses sell more quickly. Delay in coming on-line has an associated cost."	Section 4.10 was revised to more fully capture the complexities and complications of marketing and selling lots adjoining ROWs.
Walter Skip Zahlmann	424	UC	Content unrelated to analysis	
Walter Skip Zahlmann	425	UC	Content unrelated to analysis	
Susan K. Strecker	426.1	SUP PA	"I am writing to express my support for the BLM plan to place the APS transmission line along the North side of SR 74 for 7 miles. The agreed upon route fits our community well."	Statement of preference.
Steven R. Strecker	427.1	SUP PA	"I am writing to express my support for the BLM plan to place the APS transmission line along the North side of SR 74 for 7 miles. The agreed upon route fits our community well."	Statement of preference.
Walter Skip Zahlmann	484	UC	Content unrelated to analysis	
Walter "Skip" Zahlmann	485	UC	Content unrelated to analysis	
Walter "Skip" Zahlmann	486	UC	Content unrelated to analysis	
Steven L. Spangle, U.S. Fish & Wildlife Service	487.1	SSS	"P.2-13, last [paragraph] In order to protect the Sonoran desert tortoise (*Gopherus morafki*) and other species, we recommend that contained washout areas be designated for cleanout of concrete trucks and that those areas be cleaned up following completion of concrete work. Ponded water can be attractive to desert tortoise and may increase tortoise use of construction areas, increasing potential for crushing."	The referenced subsection of Section 2.4.2.2 was revised to eliminate potential for ponding of water.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Steven L. Spangle, U.S. Fish & Wildlife Service	487.2	VEG	"P. 2-21, 4th [paragraph] While a "lush and stable shrub/grass/forb community" may be desirable from a transmission line right-of-way (ROW) perspective it may not be a realistic goal for some project segments supporting Sonoran Desert vegetation. We recommend that the Integrated Vegetation Management (IVM) plan be tailored to the area and type conversion be avoided. Short stature shrubs provide some stability in areas of poor soil development."	The text in Section 2.4.3.4 and relevant sections of Appendix 2B have been revised to eliminate language that is inappropriate to desert vegetation communities.
Steven L. Spangle, U.S. Fish & Wildlife Service	487.3	SSS	"P. 3-187, 4th [paragraph] Critical habitat for southwestern willow flycatcher was designated January 3, 2013. We recommend that the related text be updated. A copy is available on our website at http://www.fws.gov/southwest/es/arizona."	The suggested reference was reviewed and the text in Section 3.16.4.1 describing critical habitat was revised accordingly and the associated Figure was also revised.
Steven L. Spangle, U.S. Fish & Wildlife Service	487.4	GEN	"P. 4-187, 1st [paragraph] We recommend that the sentence "Desert washes are mainly present west of the Action Alternative routes (i.e., Hieroglyphic Mountain area), so any disturbance to these areas would be the same under all alternatives." be reviewed for accuracy and clarity. The preferred alternative traverses a portion of the Hieroglyphic Mountains (see U.S.G.S. 7.5' topographic sheet Baldy Mountain Quadrangle, Arizona- Maricopa County) and the route crosses several washes."	This statement contained a typo ("….west of the Action Alternative routes" should be "…east of..") which has been corrected to make the statement more accurate. The statement now reads: "Desert washes are mainly present east of US 60 (i.e., Hieroglyphic Mountain area). Disturbance to these areas would be very similar under all Action Alternatives; refer to Section 4.15 for a discussion of impacts to jurisdictional drainages."
Steven L. Spangle, U.S. Fish & Wildlife Service	487.5	WLF	"P. 4-191, 1st [paragraph] The paragraph heading is "Electrocution Risk" but the 1st sentence discusses a potential for both electrocutions and collisions of raptors and other migratory birds following construction of the line. We recommend that collision risk along the length of the preferred alternative be reviewed and discussed in a separate paragraph. We recommend that the analysis consider guidance in "Reducing Avian Collisions with Power Lines" dated October 2012 prepared by the Avian Power Line Interaction Committee (APLIC). We also recommend that static wires on the transmission line crossing of the Agua Fria River on the eastern end of the project and adjacent to open water in the Central Arizona Project canal and the Hassayampa River at the western end of the project be marked with bird diverters to reduce the risk of avian collisions in those areas."	The text in Section 4.16.2.1 was revised per comment, separating discussions of electrocutions and collisions, and conducting further analysis incorporating the suggested reference. Mitigation measures have been added. Further, information regarding the potential installation of bird diverters at the crossings of the Agua Fria River and the CAP has been added to the EIS in Chapter 2 and Chapter 4 in applicable sections.
Steven L. Spangle, U.S. Fish & Wildlife Service	487.6	WLF	"P. 4-195, 7th [paragraph] and P. 4- 235 8th [paragraph] We recommend addition of text incorporating APLIC collision guidance (cited above) following discussion of APLIC electrocution guidance."	Reference to APLIC collision guidance is contained in Section 4.16.2.1; however, text was added to Section 4.16.3 as recommended by the comment.
Edmund J. Nightingale	488.1	SUP PA	"I am writing in support of the easement along the north side of SR 74 in order to keep more power lines from running through undeveloped parts of the desert."	Statement of preference.
Ms. Xenia Valle	489.1	OPP PA	"Please reject siting the proposed Sun Valley to Morgan 500/230kV Transmission Line Project on public lands and do not amend the Resource Management Plan to accommodate this siting."	Statement of preference.
Ms. Xenia Valle	489.2	LU	"Siting this line on our public lands north of SR74 is not in the best interest of the public and does not support the mission of the Bureau of Land Management (BLM). Instead, it primarily benefits one developer, while sacrificing important public resources."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Ms. Xenia Valle	489.3	OPP RMPA	"The Resource Management Plan (RMP), which was published only a couple of years ago, determined that a transmission line right-of-way is inappropriate for this area due to the negative impacts it would have. Less than a year after the RMP was finalized, however, a developer began pushing the BLM to change it in order to accommodate this line proposal. The BLM should say no to the developer and continue to manage these lands for their natural resource values."	Statement of preference.
Ms. Xenia Valle	489.4	SOC	"This alternative will also cost Arizona Public Service Company ratepayers more money. Again, this is to benefit one developer at the expense of the larger public."	Section 4.10 has been updated to include how APS increases rates and whether it would depend upon which alternative is selected.
Ms. Xenia Valle	489.5	OPP PA	"I strongly recommend that the BLM reject this proposal and maintain that this area is off-limits to transmission lines and other development.	Statement of preference.
Ms. Xenia Valle	489.6	SUP NA	"Please select the No Action Alternative in the DEIS and do not amend the RMP."	Statement of preference.
Randy Frantz Katy Frantz	493.1	OPP SAR	"In 2008 my wife and I retired and moved to Wittmann. We invested in a property on Caravaggio Lane when prices were still quite high. That money was our life savings $400,000.00. With the economy in trouble, we already lost a great deal of our property value. With the transmission line option to be installed along Cloud Road right behind our house, you will completely obliterate our retirement savings. We know that the economy will come back but the hideous electrical towers would be a permanent eye sore and unknown health hazard which will not attract anyone to live here."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values. Further, the impacts from the Sub-alternative route are also analyzed throughout Chapter 4 for all resources.
Randy Frantz Katy Frantz	493.2	LU	"There is absolutely no reason for these lines to be put in residential areas. There is a vast amount of open land in the area if there is, in fact, a need that they be installed at all."	Statement of preference.
Randy Frantz Katy Frantz	493.3	SDA	"Why not go underground and avoid the conflict as well as avoiding the destruction of beautiful landscape? Not to mention less maintenance for APS."	Section 2.7.10 explains why undergrounding the proposed transmission line was not carried forward for detailed analysis.
Randy Frantz Katy Frantz	493.4	PH	"It is also unbelievable that most of the residents in this area were not informed of this project and yet they are the ones it most impacts. Many of the people that learned about it from word of mouth still did not know about the public hearings."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notifications for public hearings were legally adequate.
Elva Lotter	495.1	LU	"It was my impression for a long time that the area North of Rt. 74 was pretty much sacrosanct. It was to be preserved because of its wildlife and sensitive habitats to say nothing of scenic beauty. Of course, some of this was self-reinforcing! The longer that the area was preserved and protected, the more it became differentiated from surrounding areas. The net effect is still that the area is uniquely important to the environment."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need. Chapter 1 also describes why an RMP amendment is needed.
Elva Lotter	495.2	OPP FL	"Please do not allow the Sun Valley to Morgan Project to go through our public lands."	Statement of preference.
Elva Lotter	495.3	OPP RMPA	"…in 2010 your Resource Management Plan stated that transmission lines were inappropriate due to the sensitive resources. Please, do not amend your plan!"	BLM finds that for consideration of the Proposed Action. Alternative 1, and Alternative 2, the RMP would require amendment to comply with the FLPMA as explained in Section 1.3.2. Section 2.10 describes the rationale for why the BLM is selecting the Proposed Action as the Agency Preferred Alternative.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Elva Lotter	495.4	SUP NA	"Putting the Sun Valley to Morgan Line North of Rt. 74 is bad for the environment & expensive for rate-payers. The preferred alternative should be the No Action Alternative."	Statement of preference.
Ladona Stallings	496.1	SOC or EJ	"It has become very clear by statements made at the public hearings of December 11th, 12th, and 13th, that the designated ROW which places the transmission line across BLM land was chosen to alleviate economic impact to the community of Vistancia, and the future planned developments of various corporations. Even when this transmission line would be no closer than two to six miles from Vistancia. By giving this financial consideration to the above mentioned groups it has now placed the transmission line along areas: Wittmann, Circle City, and Morristown, and literally in our front yards, not two to six miles."	Section 4.10 of the EIS has been revised to clarify socioeconomic and environmental justice impacts, and the relative proportion of impacts across communities. For clarification, the ACC, by placing the certificated route north of SR 74 (away from the community of Vistancia) did not place the route in proximity to Wittmann, Circle City, and Morristown; any shift away from Vistancia did not result in a shift toward Wittmann, Circle City, and Morristown. The portion of the route that would affect Wittmann, Circle City, and Morristown is not related to the decision to design the route north of SR 74.
Ladona Stallings	496.2	OPP FL	"I therefore request that you deny any ROW across BLM land."	Statement of preference.
Ladona Stallings	496.3	SDA	"The hope of the impacted communities is that your refusal will cause the ROW to return to the south side of Highway 74. And since the wealthy among us who did not care what happened to others will decide to choose another route such as the West Wing Corridor."	Statement of preference.
Ladona Stallings	496.4	SOC	" Regarding the APS Sun Valley to Morgan transmission line, I can only feel that placing the line on your sub alternative along Cloud Rd. is an injustice to this community. As you told me that your first, and preferred route was to go directly north along state land on the west boundary towards highway 74. By using this route you minimized the impact to the local resident areas while maintaining maximum undivided use of state land. You also stated that a single land owner, a Mr. Anderson, objected. By checking public records I find that this property is owned by BM3 North Holdings LLC, since you stated a Mr. Anderson was the owner, I will assume that BM3 North Holdings is a corporation owned by Mr. Anderson. You also stated that there are no homes or development on Mr. Anderson's land. Therefore; the route was moved to the current ROW placing it about one mile from Cloud Rd. and this community. I find it unconscionable that you could consider his property value for future development while destroying our values. Ours are existing residences. I am finding articles where a transmission line of 500 kV has made it impossible for home owners to sell their property. If you would provide me with your e-mail address I will forward one of these articles to you. We already know that this designated ROW was chosen so that it would not impact the property values of Vistancia, and future development by corporations in north Peoria. Again, how unjust is it to destroy our investments, and in many cases our retirement lives by placing the transmission line along Cloud Rd. I hope you will reconsider the use of the sub alternative route so our lives our not so horribly impacted. I will be contacting the ACC also to request that the transmission line not be sited along Cloud Rd. This placement would put the ROW about 200 Ft. from my front door, and as close to my neighbors properties. It would be even closer to our properties north boundaries."	This comment was taken from a letter to the ASLD, which was an attachment to a comment letter on the Draft EIS. When the comment refers to “you” or “your” it is referring to the ASLD. Statement of preference. Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue. The BLM decision on the proposed project would only apply to any BLM-managed public lands crossed by the proposed project and not land owned and managed by the Arizona State Land Department. The portion of the project that would affect people’s homes in Wittmann would not be on BLM-managed public lands and was proposed by the Arizona State Land Department.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Ladona Stallings, et al.	496.5	PH	"Due to inadequate notification for the public hearing of the Proposed APS Sun Valley to Morgan 500/230KV Transmission Line Project of December 12, 2012, at Nadaburg School and newly discovered information since that meeting, the residents of the area that will be impacted by this project find it absolutely necessary another public meeting be held."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notifications for public hearings were legally adequate.
Ladona Stallings, et al.	496.6	GEN	"Our concerns that have not been addressed are as follows: Improper notification of Wittmann, Circle City and Morristown residents. 2. Continued refusal to provide Freedom of Information requests 3. Long range effects of Health and Safety. 4. Decrease of property values throughout the areas. 5. Unnecessary disruption of Endangered Species. 6. Conservation of pristine BLM land."	The EIS provides a complete analysis of most of the concerns: 1. Notification of Wittmann, Circle City, Morristown and surrounding residents is addressed in Section 5.2. 2. Addressing Freedom of Information Act requests is beyond the scope of the EIS. 3. Impacts to property values are addressed in Section 4.10 4. Impacts to endangered species are addressed in Section 4.16. 5. The BLM's mission is explained in Section 1.5.2, and impacts to land use on BLM-managed public land are addressed in Section 4.6.
Mary & Philip Marquardt	497.1	OPP PA	"As registered Arizona voters, we need to go on record as opposed to the Proposed Sun Valley to Morgan Transmission Line."	Statement of preference.
Donald Begalke	500.1	GEN	"BLM's NOI process is very, very inferior considering the ACC SV-M decision including controversies regarding the NE 9-10 miles of proposed line segment route on BLM-managed Public Lands and regarding the extremely, very large portion of Maricopa County's 4.500,000+ population being non-recipients on associated matters."	Statement of opinion.
Donald Begalke	500.2	PH	"Using APS to advertise SV-M Public Scoping Meetings Is a huge disgrace because they're agency announcements. BLM doing own work would have resulted justly/better for the Maricopa County Public."	Sections 1.7 and 5.2 describe the Public Scoping and Public Involvement activities that have been conducted for this project. The number of and notifications for public hearings were legally adequate.
Donald Begalke	500.3	GEN	"APS had objected to the ACC decision because they do not want to build a high-voltage line over a 10-lane wide freeway (foot-noted in the DEIS) that is a future replacement for SR74. Additionally, the ACC action has caused a construction delay of SV-M, and each delay causes construction costs' increases. Since the BLM had to complete the B-H RMP before accepting APS's forced application for an EIS, that additional delay also adds to increased APS construction costs."	Statement of opinion.
Donald Begalke	500.4	OREC	"My scoping presentation regarded the 55+ years BLM and Maricopa County residents and government had, and LPRP [Lake Pleasant Regional Park] became a reality and had continued to grow as county taxpayers/volunteers' efforts so that over 1.5-million users enjoyed It in 2010. I also stated SR7 4 was important to folks' experiences at the park, and also to surrounding and buffering BLM-managed Public Lands were westward for recreations and educations. In the SV-M DEIS, BLM fails to explain why in 2013 they used 2006 stats on LPRP users ?? That is deceptive and/or uninformed due to lack of BLM research for the DEIS!!"	Park user data for LPRP was from 2010 (Section 3.10.6). The 2006 recreation data was general Maricopa County recreation user data from two specific studies, one conducted as part of the 2008 SCORP and one conducted by Arizona State University. Revising the numbers would update the data and improve the accuracy of the EIS, however it does not change the analysis contained in it.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Donald Begalke	500.5	NEPA	"In Vol.1 a page is unnumbered and titled "Abstract". While reading the Abstract paragraphs, discouragement was felt because BLM had "the cart before the horses" - ? When can the reader of EIS options understand because BLM had not presented the entire two volumes yet? Whether read from hard copies or on a PC, does BLM expect anyone to read the entire DEIS after not providing the Public the DEIS details before the options?"	An Executive Summary is also provided in the beginning of the EIS.
Donald Begalke	500.6	GEN	"…then a person reaches the Public Scoping Meetings Section and Table 1.7-1 on Page 1-17. The Scoping Meeting of June 8, 2011 is not included at all. We were at the BLM Training Center the eve of June 8, 2011 and folks made their 5-minute scoping comments, and departed at the end". Arriving on P.1-18, the last paragraph reveals "on June 8, 2011, an Economic Strategies Workshop was also conducted •••• ". What??!!"	Information described in Section 1.7 was reviewed for accuracy and is correct. Information regarding the Economic Strategies Workshop was moved from Section 1.8 to 1.7.
Donald Begalke	500.7	GEN	"In Table 1.8-2 we find the words "would benefit developers"! That is BLM's bias or politics when they should be neutral!!"	Table 1.8-2 provides a summary of issues from Scoping, which includes the Economic Strategies Workshop. The issue referenced by this comment is that the process of amending the RMP should consider whether or not it is appropriate to amend the RMP in such a way that would benefit developers. The referenced text is stating the issue as it was raised during scoping, and is not expressing bias or politics on the part of the BLM. Socioeconomic impacts of all alternatives are analyzed in Section 4.10.
Donald Begalke	500.8	GEN	"Last week I had a telephone conversation with the BLM's Ms. Kathleen Depukat who alleged the ESW [Economic Strategies Workshop] was the same meeting as the scoping comments were. Really? In review of Mr. lncardine's words to me, he stated the scoping individuals would be "invited", meaning the .June 8, 2011 meeting was never announced to nor Intended for the Public. Hiding events is dirty politics. At the "scoping meeting" ever presentation was oral. For an EWC, the duties are verbal, written and charted, and that combination did not occur as there were no "round tables" for small groups to strategize."	Sections 1.8 and 5.2.2 describes the details of the Economic Strategies Workshop that was held for this project.
Donald Begalke	500.9	GEN	"Also on P.1-18 is a scoping comments table with one-to-two words per category except for those "unclassifiable", AKA "nonsubstantive". The whole table is nonsubstantive because the DEIS commenter has no categories' statements nor details to read, and the commenter should not assume anything about what's in the table. Let's talk about "scenes/visuals" (as a category). We should read specifics of Ss/Vs. We have none in DEIS Table 1.8-1. Are there public statements or questions about transmission towers? No!! Do scoping commenters know about different transmission structures? Is the high-voltage electric line an objection? Did any scoping commenter present the abilities of developers to minimize views with anything objectionable associated with a SV-M line? Which commenters spoke or wrote about monopoles, and would that be from a "pro" or "anti" stance? APS plans to use monopoles in constructing SV-M, and diameters of such poles are far less blocking than the erector-towers with T· bars at the top; thus, viewing monopoles from distances is "more pleasing to the eyes". Who asked about the color of the monopoles? Where are the answers in the DEIS to public·scoping comments and/or concerns on Ss/Vs?"	Section 1.8 provides a summary of issues identified during scoping. A detailed presentation of scoping comments and issues is available in the Scoping Report, which is available on the BLM Project website (see http://www.blm.gov/az/st/en/prog/energy/aps-sunvalley.html), as noted on page 1-18 of the EIS.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Donald Begalke	500.10	GEN	"Additionally, the Phoenix metro has multitudes of varied high-voltage lines bringing electric energies to an enlarged community area and to neighborhoods. Folks have seen them for decades, and adjusted to them. In the DEIS where are BLM's reference locations of such that anyone could travel to for viewing/reviewing established electric lines?"	BLM does not recommend specific locations where parties could view established electric lines, as the context for the infrastructure could affect how it is perceived. However, the EIS does include visual simulations of the proposed line to assist the reader in getting a good idea how it would look from various locations in the project area.
Donald Begalke	500.11	SOC	"Diamond Ventures, against APS's SV-M routes, successfully made a land-swap deal with the BLM a few years ago; the U.S. Public lost severely in the transaction. Now Diamond has the prime land and is complaining about SV-M affecting land values? Nonsense!!"	The comment does not raise questions about the analysis or provide additional information for consideration.
Donald Begalke	500.12	LU	"Regarding SR74, some of the Public has read Maricopa County's Article 2201-F, the criteria establishing preservation of natural cultures and landscapes plus scenic qualities along the highway. Has BLM? That is substantive, but it is not in the DEIS!"	Section 4.14 references the Maricopa County Scenic Corridor; however, the scenic corridor is not applicable within City of Peoria, see Section 3.14.1. The BLM uses VRM classifications as described in Section 3.14 and visual impacts described in Section 4.14.
Donald Begalke	500.13	OREC	"Further, neither "P.A." nor "Alt.-1" protect the LPRP and adjacent Public Lands that provide buffering to the west of the park's main entrance and buffering that's very necessary to help the "desert tortoises"…"	The impacts of the transmission line on the recreation experience at Lake Pleasant Regional Park are analyzed in Section 4.9.2.2 and the impacts on the visual resources of the Park are analyzed in Section 4.14. Impacts to desert tortoise are analyzed in Section 4.16.
Donald Begalke	500.14	SSS	"The tortoises should be protected from future multi-event years SV·M maintenance disturbances. Desert tortoises have suffered tragedies of harassments to killings elsewhere, and are candidates to be protected, and the BLM-managed Public Lands north of 74 can be a refuge for additional tortoise families."	Impacts to desert tortoises are analyzed in Section 4.16.
Donald Begalke	500.15	OREC	"Back to Lake Pleasant Park, as the metro continues northward toward SR74, the population will grow and more land will be needed for an expanded park with BLM's management of our Public Lands as users and activities at LPRP both increase. BLM's DEIS has not addressed additional park concerns."	Although BLM is not cognizant of any potential expansion of Lake Pleasant Regional Park, there could be a Recreation and Public Purposes Act request or other land request that could be made as pressures for recreation increases in this area.
Donald Begalke	500.16	LU	"The "Alt.-1" route is even more scarier than all stated above regarding the "P.A." route. The "corridor" of 1/2-mile wide is the huge problem. Details what will be inside the corridor are not in the DEIS - ??"	It is currently unknown what additional utilities could be within an expanded corridor, since BLM has not received any applications. Section 2.5.1 indicates that the multiuse corridor could be used for co-location of future utilities within the corridor, consolidating similar land uses and future NEPA would be required for any future actions.
Donald Begalke	500.17	TRANS	"Since MAG decides freeways for our metro, freeway evidences should be in the DEIS and not just footnotes for a 10-lane wide freeway to replace SR74. The true width of a 10-lane wide freeway will include lanes for shoulders, medians, bridges' structures, ramps et al; thus the total width could be 22-24 lanes wide. Thus, "Alt.-1" should never have been an option in this APS application, DEIS, for a SV-M transmission line. Having MAG's freeway on Public Lands N. or 74 is horrible, BLM!! MAG has no application to the BLM for anything."	Additional Information on MAG's conceptual plan has been added to the cumulative impacts section.
Donald Begalke	500.18	SOC	"The DEIS's "Alternate-2" and "Alternate-3" options are less expensive than the "P.A." or the "Alt.-1" routes. "Alt.-2" and "Alt.-3" are not on lands managed by the BLM, but are already inside the metro-community's lands like all of APS's original SV-M routes to the APP&TLSC and to the ACC. In this tragic economy APS, who planned SV-M routes more cost-effective, and APS's electric-ratepaying Customers need the lowest-costing SV-M."	Section 4.10 has been updated to include how APS increases rates and whether it would depend upon which alternative is selected.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Donald Begalke	500.19	NEPA	The DEIS "No Action Alternate" should be amended to include a ROW across the BLM-managed lands near the Sun Valley Substation and to include a ROW across the "key-figured" BLM land just south of SR74 to assist the ACC and APS select a final routing for SV·M. If those two BLM parcels require any RMPs, please, amend for the Final DEIS also.	The No Action alternative cannot add a ROW because it would then be an action alternative. The commitment of BLM-managed public lands suggested by the comment would be the same as Alternative 2.
Donald Begalke	500.20	SAAA	I respectively urge the BLM to set aside any biases and politics in these SV·M matters, and allow an amended "No Action Alt." be renamed and become the Final EIS decision for the APS and for their electricity-paying Customers.	The No Action alternative cannot add a ROW because it would then be an action alternative. The commitment of BLM-managed public lands suggested by the comment would be the same as Alternative 2.
Walter "Skip" Zahlmann	502	UC	Content unrelated to analysis	
Cheryl Eckhardt, Environmental Compliance Specialist, National Park Service	503.1	LU	"There may be Land and Water Conservation Fund (LWCF) projects within or near the study area that could be affected by this project. We recommend you consult directly with the official who administers the LWCF program in Arizona to determine any potential conflicts with Section 6(f)(3) of the LWCF Act (Public Law 88-578, as amended). This section states: "No property acquired or developed with assistance under this section shall without the approval of the Secretary (of the Interior), be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he finds it to be in accord with the then existing comprehensive statewide outdoor recreation plan and only upon such conditions as he deems necessary to assure the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location."	No Land and Water Conservation Fund projects have been identified within the study area and attempts to reconfirm this have been made. If such projects are identified at a later date, all appropriate coordination with the applicable agencies and APS will take place.
Howard Brown	504.1	OPP FL	"I strongly oppose installing the 500K power line on Public Land."	Statement of preference.
Howard Brown	504.2	SAAA	"Please run the line along the South side of SR74. The visual impact will be only marginally more then the Northern route on BLM land and this location will not encumber our valuable public lands. As our beautiful valley builds out, public lands will become more and more critical to the ongoing quality of life in Arizona.	Statement of preference.
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.1	SUP PA	"We appreciate your work on this project and support the approval of the Preferred Alternative (Proposed Action)."	Statement of preference.
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.2	OPP ALTS 2&3	"…we oppose the consideration of Alternatives 2, 3, and the Sub Alternative."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.3	SOC	"Most of the points revolve around the inappropriate approach of analyzing the private land impacts of Alternative 3 as simply effecting raw land. In contrast to BLM land that is intended to remain in its current state indefinitely, or other private land with no near-term plans to develop, this land has been planned, entitled, and invested in through past and ongoing infrastructure. According to John Bums Real Estate Consulting (report attached) the 2012 sales pace of this community ranked 29th in the nation, and increased its standing from the previous year's rankings."	Revisions have been made to the EIS indicating that “undeveloped land” is not “raw land” and that developments on private lands are in various stages and generally describing a range of effects to developments.
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.4	SOC	"Ongoing Vistancia Development The built portion of the Vistancia community currently stops approximately 1.5 miles south of the Alternative 3 alignment. However, design and infrastructure improvements are underway to advance development to the north. On January 15, 2013, public bids were received to build a $5.5 million bridge, kicking off the next phase of development. This work will commence in February and be completed in the middle of 2013. Current construction schedules anticipate infrastructure being installed within the Alternative 3 alignment in the second half of this year and homes going under construction within 3/4 of a mile from this alignment in early 2014. This next phase of improvements also includes parcels designated for a future public school and park, both located approximately *Y2* mile from the Alternative 3 alignment. The National Environmental Policy Act (NEPA) requires the EIS to analyze the impacts of the Alternatives on past, present and reasonably foreseeable future actions RFF A or reasonably foreseeable development RFD. A current impact is defined as one that occurs between the start of construction and 10 years. The Vistancia community is rapidly expanding into the areas deemed as raw land in the DEIS, which must be considered in your analysis of this land."	Revisions have been made to the EIS indicating that “undeveloped land” is not “raw land” and developments on private lands are in various stages and generally describing a range of effects to developments.
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.5	PH&S	"EMF Exposure Although page 4-67 states that effects of EMFs are " ... equivalent among alternatives, when compared to levels defined by the ICNIRP ... ", this 2,000 mG exposure limit is not an appropriate benchmark. As noted on page 3-71, the ACGIH provides that individuals with pacemakers should not exceed exposure levels above 1,000 mG. Given the increased level of residential development planned near Alternatives 2 and 3, and the likelihood of those developments containing additional age restricted communities (as Vistancia already does), applying this more restrictive exposure level should be evaluated and could show Alternatives 2 and 3 having a negative public health impact."	Potential impacts for EMF are analyzed in Section 4.7. It is currently unknown if and when future development would occur and how close to the transmission line any development would occur and what age the potential residents would be.
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.6	REC	"Recreational Page 4-87 mistakenly states that future recreational development is unknown where Alternative 2 crosses land identified for future recreation (and is thus a negligible effect). That land within the Saddleback Heights community is shown as open space *I* golf course, so this should be stated as a more significant effect as noted on page 4-88 in relation to the Alternative 3 conflicts with the Vistancia golf course."	Analysis under the heading of “Other Recreation” in Section 4.9 was revised to analyze the indirect effect of the transmission line crossing lands that would be used for open space/golf course.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.7	SOC	"Home Values Page 3-102 limits home price values and increases in values to 2009. This focus on pricing in the middle of the recent economic recession, and lack of regard for the record Phoenix area home price appreciation rates experiences in the recent few years, is inconsistent with the intent of this report. According to a December 26, 2012 release on the S&P/Case-Shiller Home Price Indices, the average home price in the Phoenix market in October of 2012 had increased 21.7% from where it was one year prior. A more recent article (also attached), notes that prices have increased annually by nearly 23% in Phoenix. The 2009 pricing data used in the DEIS is already outdated."	Home values are not used for any impact analysis in Section 4.10. Changes in the real estate market would not change the impact of the transmission line on home values. Regardless of the present value of any property, the addition of the transmission line would affect the value of the property on a percentage basis, as described in the cited source contained in the literature review in Appendix 3A.
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.8	SOC	"Land Values When looking at land values and property tax generation in Alternatives 2 and 3 (see pages 4-1 05 and 4-1 08), the report takes a short term look at today's developed conditions and 2011 tax rates. This generalized impact on raw land values irresponsibly ignores the more sophisticated and long term plans and underwriting of the master plan communities impacted by these routes. Although there may typically be a relatively small impact on vacant land values, the ripple effect of how decreased home values would limit oyerall developability in some of these impacted master plan communities has not been captured in the report. In the case of Alternative 3, the impacted land with Vistancia and Saddleback Heights contains drastic topography that significant increases development costs. With the increased impact on home pricing (mentioned on page 4-91), home values would not be expected to justify development for the foreseeable future. This would then force property currently entitled for development to remain vacant indefinitely. In the case of the Vistancia Community, infrastructure and services have been sized and installed for the ultimate build out conditions and this forced reduction in densities would cause us as the developer to more heavily allocate the cost of those improvements to fewer units, inhibiting continued development in general."	The potential impact on taxes would be a cumulative impacts issue, and Section 4.19.11 is revised as applicable. The effect of potentially inhibiting development because of the value of the property/homes being reduced by the presence of the transmission line would be an indirect effect and is addressed in Section 4.10, as applicable.
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.9	SOC	"Other Socioeconomic Impacts While the DEIS attempts to analyze this project's impact on home values and property taxes, it does not look at other economic implications of the home construction process and spending habits of new home owners. Reducing buildable units as described above will eliminate or defer millions of dollars of infrastructure improvements along with the associated permit fees and sales taxes paid for that work. Each single family building permit pulled within the Vistancia community pays an impact fee of $11,657 in addition to several thousand dollars in other building permit and connection fees. Additional jobs and economic benefit is created during the construction process of each home. According to research from the National Association of Home Builders, during the first two years of closing on a house, a typical buyer of a new single family detached home tends to spend on average $7,400 more than a similar home owner who does not move. Impacting land that is planned for near-term development as occurs in Alternatives 2 and 3 reduces a number of additional economic benefits to the area including fees to the municipality, job creation, sales tax revenues, and retail sales."	The effect of potentially reducing the money homeowners would spend locally and the associated economic generation would be a cumulative effect and is addressed in Section 4.19, as applicable.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.10	SOC	"Property Taxes On page 4-105, the report states that "the net effect on property tax revenue under Alternative 2 would be beneficial, major, and long-term. These benefits would accrue to taxing entities and the beneficiaries of those taxes." Basing the long-term impact on the 2011 tax revenues is inconsistent. Speaking specifically of the Vistancia project, the impacted property is currently taxed under agricultural status, the ultimate build out of residential homes will create an exponentially higher tax base in a long-term analysis. · Furthermore, this property is part of a Community Facilities District (CFD), whereby bonds have been issued to fund master utilities infrastructure improvements, with the repayment source of those bonds being the property's projected tax base at build out. A proper long-term comparison of build out conditions vs. the assessed value of a power line will likely show a negative impact of property tax revenues and may have a devastating impact on the special taxing district at Vistancia. The lower build out tax rates, potential undermining of the CFD, and fewer homes being built (as mentioned in the previous section) all have a negative impact on taxing entities and the beneficiaries of those taxes."	Impacts to property taxes and repayment of bonds that would result from implementation of Alternatives 2 and 3 would be a cumulative socioeconomic impact and Section 4.19.11 is revised as applicable.
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.11	VIS	"Visual Impacts Page 4-162 states that "within the portions of the route unique to Alternative 3, the contrast would be weak and the table on page 4-171 states that the long term visual impact on these portions of the route is Negligible. These conclusions are based upon a view shed analysis containing a majority of Key Observation Points (KOPs) proximate to the Preferred Alternative. Only two KOPs from the view shed analysis were taken to the step of simulated views of the line along the Carefree Highway Alignment, and each of these locations was more than a mile from this alignment."	Due to private land, access issues, and the currently undeveloped nature of the areas adjacent to Alternative 3, limited KOPs in this area were deemed adequate for impact analysis.
Mark Hammons, Vice President/General Mgr Vistancia Land Holdings, LLC	510.12	VIS	"Although the report makes claims about long term impacts, it has not taken into consideration improvements that have occurred over the past couple years, or those that will be occurring in the next few months/years. Photos used for this analysis were taken in 2008, since which time, additional parcel development has occurred that will already bring Vistancia residents approximately ~ mile closer to this alignment. Throughout 2013, bridge and roadway construction will bring KOPs nearly adjacent to the Carefree Highway alignment bisecting Vistancia and Saddleback Heights. The long-term claims of this report are unfounded because by 2014, Visual Impact ratings for Alternative 3 will increase to levels experienced by the Preferred Alternative (minor, moderate, and even strong and domineering)."	Visual impact analysis was conducted for present conditions. The cumulative impacts discussion for visual resources is in Section 4.19.15 addresses potential future visual impacts.
Walter "Skip" Zahlmann	511	UC	Content unrelated to analysis	
Robert T Wanless, Director, Business Development, M+W U.S., Inc.	531.1	SUP PA	"I am writing again to express my continued support for the Proposed Action…"	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Robert T Wanless, Director, Business Development, M+W U.S., Inc.	531.2	RENE	"Solar project development is critically dependent on access to transmission lines. This is especially evident in Arizona where proposed solar projects have clustered in areas such as the Palo Verde Hub and Kingman where transmission capacity is readily available. Achieving greater use of Arizona's significant solar resources-- and the associated jobs and environmental benefits-- will depend upon some amount of new transmission development. The need for new transmission to support renewable energy in the West and Southwest has been widely recognized by many state and federal agencies, including the Arizona Corporation Commission, the Western Governors Association, and the Department of Energy. Given the large public benefits these transmission projects can offer, some of this development should undoubtedly occur on BLM land. Among the benefits transmission offers are the jobs the solar industry creates for Arizona. For instance, I recently worked on a project to install a 21MW system in Gila Bend, AZ for Arizona Public Service. This project provided roughly 400 local full time engineering and construction jobs during the 9-month development period. For this project we collaborated with McCarthy Builders in Tempe, AZ who were hired for the system's installation and subcontracting work. In addition to project development, our project supported work for the utilities for interconnection and system operations. Beyond employment from projects supported by the transmission line, there are direct jobs created in its construction. As noted in the DEIS, the proposed project will create 758-783 jobs at the peak of construction (DEIS, p 4-92). These jobs come at a critical time when Arizona is still in recovery from a major recession. In addition to these jobs created, the DEIS should also acknowledge how these potential jobs might be affected by a delay or denial of the Proposed Action."	Additional information addressing this comment has been added to Section 4.10.2.4.
Robert T Wanless, Director, Business Development, M+W U.S., Inc.	531.3	RENE	"In deliberating this phase of the project approval process, I urge the BLM to thoroughly consider the fact that the Proposed Action has already met approval by the Arizona Corporation Commission ("ACC"). If the Proposed Action in the DEIS is delayed or denied, it would send the project "back to square one" since it would need another ACC approval. In addition to the jobs impacted directly, this could cause cumulative jobs forgone since future solar developers would have less confidence in Arizona as a place to do business. Meanwhile, solar projects currently in development would suffer significantly due to the limited transmission capacity available on the system. As the DEIS points out, over 1500 MWs of solar energy are in development at the Delaney substation and could be at risk if adequate transmission is not built. Delaying these projects from coming online would only extend Arizona's reliance on conventional energy sources like coal, and all the attendant environmental consequences they bring."	Section 4.10.2.4, the No Action Alternative was revised to include discussion of the need for APS to return to the ACC process, and address potential indirect socioeconomic effects of that action.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Robert T Wanless, Director, Business Development, M+W U.S., Inc.	531.4	LU	"One of BLM's five priorities is "encourag[ing] and facilitat[ing] renewable energy development- solar, wind, and geothermal- on the Nation's public lands." This commitment has been demonstrated through recent initiatives such as the Solar Programmatic Environmental Impact Statement (PElS) and the BLM's participation in the Rapid Response Transmission Taskforce (RRTT). Secretary of the Interior Ken Salazar echoed this sentiment in his own words, "To build America's clean energy economy we must update our transmission grid for the 21st century, so that we can efficiently move power from the new energy frontier to the places it is consumed." We believe that the Sun Valley to Morgan project is in alignment with the goals of the agency since it facilitates renewable energy development in Arizona and because it provides transmission necessary for delivering renewable energy. Approving the DE IS quickly, via the Proposed Action, is the best way to uphold these goals. Indeed, we think the DEIS should acknowledge the recent actions the BLM has taken in pursuit of renewable energy development. One notable example was the decision to add a new solar energy zone in Arizona in conjunction with the Solar PElS. This modification reveals that the BLM's plans are intended to be dynamic while tending toward more, not less, development of renewable energy-- and supporting transmission lines -- on public lands in accordance with the agency's goals. Furthermore, timely approval of these projects has been a priority for over a decade as established in Executive Order 13212 signed by President Bush which states the following: "For energy-related projects, agencies shall expedite their review of permits or take other actions as necessary to accelerate the completion of such projects." This is also in accordance with Secretary Salazar's Order No. 3285, § 5: "Encouraging the production, development, and delivery of renewable energy is one of the Department's highest priorities. Agencies and bureaus within the Department will work collaboratively with each other, and with other Federal agencies, departments, states, local communities, and private landowners to encourage the timely and responsible development of renewable energy and associated transmission while protecting and enhancing the Nation's water, wildlife, and other natural resources." Moreover, the BLM has a long history of encouraging multiple use of its lands, and there could not be a more salient example of multiple use than a transmission line that is colocated in a transportation corridor (SR74), that will also facilitate solar projects, some of which may eventually be placed on BLM land."	BLM acknowledges in Section 1.5.2 that the project is consistent with its multiple use mandate, executive direction, and agency priorities. Additional information has been added to Section 1.5.2.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Robert T Wanless, Director, Business Development, M+W U.S., Inc.	531.5	RENE	"The DEIS also discusses some existing or future solar energy generation facilities that could be impacted by the project: The Cotton Center Solar Plant, the Luke Air Force Base Solar Project, the Paloma Solar Project, and the Solana Generating Station. The value of these projects might be strengthened by a more robust transmission system that enables more opportunities for renewable energy delivery, however the DEIS provides no insight on this issue. We urge to BLM to elaborate on these issues in the FEIS. Furthermore, the DEIS alludes to potential environmental benefits from increased solar energy on the Arizona grid by discussing the current mix of energy resources: According to the EPA Clean Energy section, the fuel mix of the electricity generated in the Study Area (supplied by APS) results in C02 emissions of I ,253 lb per MWh compared to the national average of 1,293 lb per MWh (EPA 2007). The mix of power generating technologies in the WECC Southwest Region includes 40.2 percent coal, 36.2 percent natural gas, 14.8 percent nuclear, 5.9 percent hydroelectric, 2.7 percent other renewables, and 0.1 percent oil (EPA 2011d). Given Arizona's reliance on fossil fuels, the environmental impact of the energy system could be reduced by the additional of more solar energy to the system. The Sun Valley to Morgan project facilitates this outcome, although it is not discussed in the DEIS. The FEIS should discuss these issues more thoroughly."	Additional information was added to related sections, as applicable.
Robert T Wanless, Director, Business Development, M+W U.S., Inc.	531.6	RENE	"Above all, we stress that the Proposed Action should be approved in a timely manner so that the project can move forward to construction as soon as possible. However, if there are any improvements to be made to the DEIS, they may exist in the opportunity to better explain the economic and environmental benefits of the project. For instance, the Air and Climate impacts section does not consider the project's ability to allow more solar energy, which could mitigate the air and climate impacts from fossil fuel energy. Furthermore, page 4-211 and 4-224 of the DEIS provide an indication of the existing or planned solar energy facilities that might benefit from this project, as well as future facilities that are in development (p 1-3). However, these descriptions are minimal and understate the future benefits the transmission facility may afford to solar developers. Because the grid is one large interconnected system, transmission additions in one area can allow more power to be transferred in remote locations where renewable energy is being generated. Moreover, the Sun Valley to Morgan line is in a strategic location since it represents a key link to California's significant renewable energy market. Adding this transmission line could theoretically increase the ability for renewable energy development throughout Arizona to export to California."	Section 4.19.3 was revised to include analysis of the cumulative effect of the transmission line and potential future renewable energy projects on air quality. Also, Section 4.19.11 was revised to reflect cumulative impacts to the socioeconomic environment from the transmission line in conjunction with future renewable energy projects.
Robert T Wanless, Director, Business Development, M+W U.S., Inc.	531.7	RENE	"In reviewing the DEIS, we note that considerable attention was paid to the impacts to certain selected economic activities, (e.g. OHV recreational use). This attention was in the form of extensive economic analysis, personal communications, and so on. We believe the DEIS should be improved to give other industries (e.g. solar energy, housing) similar attention to OHV in the FEIS."	Considerable attention was given to OHV use in the EIS because this current recreational use is well documented within the study area. Other industries are discussed in Section 4.19, Cumulative Impacts.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sierra Club on behalf of Lorna Falkenstein	586		See Letter 116 – Added introductory paragraph: "This has recently come to my attention and deserves your consideration where WE, the public are concerned with regard to this highly private consideration for development of land which has been originally set aside for public management of sensitive lands. Respect must be given this area as it is one of those highly sensitive areas for natural habitat. Even the least of our endangered and rapidly declining natural species needs and deserves our highest attention. These lands and the resources they contain are for future generations and it is also imperative to realize the necessity to preserve all that is within those lands with careful management and protection for all that is contained there."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Sierra Club on behalf of Brian Sowle	587		See Letter 116 - Added: "Public lands need protecting."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Walter "Skip" Zahlmann	647	UC	Content unrelated to analysis	
Walter "Skip" Zahlmann	648	UC	Content unrelated to analysis	
Walter "Skip" Zahlmann	649	UC	Content unrelated to analysis	
Bill Conner	650.1	SUP PA	"I support the choice of the Proposed Alternative using the north side of Route 74, for some of the following reasons:"	Statement of preference.
Bill Conner	650.2	VIS	" If they put the lines on the Carefree Highway alignment, they will be visible from Trilogy and many parts of Vistancia."	The impact of the proposed transmission line on visual resources, and specifically the visual resources north of SR 74, is analyzed in Section 4.14.
Bill Conner	650.3	LU	"State Route 74 is already designated as a transportation corridor. It makes sense to place power lines along an existing transportation corridor."	Statement of preference.
Bill Conner	650.4	LU	" SR 74 is scheduled by ADOT to be expanded into a 6 lane highway. It will have 1,000 feet on each side of the road scraped for right-of-way. The APS lines would be installed adjacent to that 1,000 foot right-of-way."	Statement of preference.
Bill Conner	650.5	GEN	"The PROPOSED ALTERNATIVE is supported by our Federal delegation, Arizona Department of Transportation (ADOT), Maricopa County, City of Peoria and many other stakeholders…The route along the north side of SR 74 was proposed by the Arizona State Line Siting Committee and then approved by the Arizona Corporation Commission."	Statement of preference.
Bill Conner	650.6	GEN	"To build high-powered transmission lines through native desert is not environmentally reasonable."	The EIS evaluates the environmental reasonableness of the alternatives considered, as well as those eliminated from detailed analysis, in Chapter 2.
Bill Conner	650.7	LU	"Anything other than the proposed route is not compatible with the City of Peoria's General Plan and future developments along the south side of SR 74."	Statement of opinion.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bill Conner	650.8	LU	"Environmentalists can identify the north side of SR 74 as the southern boundary of BLM land, visually pronouncing that the BLM land to the north will be protected for generations to come."	Statement of opinion.
Bill Conner	650.9	SUP PA	"We as citizens have participated for the past 3 years in the public process and now BLM has identified and supports the proposed alternative route, the route we, the Red Shirt Brigade, support."	Statement of preference.
Joel Kirschbaum	651.1	SUP PA	"Please save our desert and Trilogy. Keep the power lines north along the route of the proposed major highway."	Statement of preference.
Wayne Carney	654.1	OPP PA	" Please keep the power line south of highway #74 rather than in our pristine desert ! Future generations will thank you !"	Statement of preference.
Michael Banks	655.1	SUP PA	"…the DEIS surfaces an opinion that the preferred alternatives location that resides on the north side of SR 74. I support this location for several reasons."	Statement of preference.
Michael Banks	655.2	LU	"This location is preferred as it is already designated as a transportation corridor as such, this is an ideal location with minimal impacts to surrounding communities."	Statement of opinion.
Michael Banks	655.3	GEN	"The proposed alternative location is supported by the City of Peoria, ADOT, Maricopa County and many other stakeholders."	Statement of opinion.
Michael Banks	655.4	LU	"Anything other than the preferred alternative locations is not in line with the City of Peoria's general plan for the areas south of SR 74."	Statement of opinion.
Michael Banks	655.5	VIS	"The visual impacts resulting from installation south of SR 74 could degrade property values of homeowners in the Trilogy and Vistancia Communities."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue.
Ronald Friedman	656.1	SUP PA	" As well as many other residents in Trilogy at Vistancia I am in favor of the proposed alternative plan for the APS lines to be placed north of rte 74."	Statement of preference.
Eleanor Hess	657.1	SUP PA	" I would like to see State Route 74(north side) used to house power lines. This route is used for transportation and it makes plain sense to place lines there. This would not infringe on any communities that object to the area that APS wishes to use. Route 74 is one that ADOT supports also. Just end this fight and and join the citizens that have been committed to this project for several years!!!"	Statement of preference.
John William Werner	658.1	SUP PA	"I am in support of the proposed alternative which is on the north side of state route 74. This proposed alternative is supported by ADOT, Maricopa County and the City of Peoria. SR 74 is designated by ADOT as a 6 lane highway so let's put the line next to this highway. I ask you to vote for the proposed alternative."	Statement of preference.
Brent & Rose Dubberstein	659.1	SUP PA	"My wife and I are in support of the PROPOSED ALTERNATIVE which is on the north side of State Route 74."	Statement of preference.
Jackie Pendergast	660.1	OPP ALT3	"Please do not put the power line on the Carefree Highway alignment. It would look horrible and would devastate our property value. Locate the line along highway 74; that is the sensible place to have it."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bob and Diana Delivuk	661.1	SUP PA	" We are in support of the PROPOSED ALTERNATIVE which is on the north side of State Route 74."	Statement of preference.
Robert E. "Butch" Pendergast	662.1	SR74	" The proposed APS power line should go along highway 74. That is the logical place for a power line. Conversely, putting power lines in or near residential areas should be avoided."	Statement of preference.
Robert & Kathy Wrightson	663.1	SUP PA	"We are in support of the PROPOSED ALTERNATIVE on the north side of State Route 74. State Route 74 is already designated as a transportation corridor. It makes sense to place power lines along an existing transportation corridor."	Statement of preference.
Ron Harkness	664.1	SUP PA	"I would like to make it known that the proposed alternate route on the north side of SR74 is the way to go. It would be reasonable to think that running the transmission lines along a existing corridor is more practical than to meander over native desert."	Statement of preference.
Ron Harkness	664.2	VIS	"We also have the concern that these transmission lines will be an eye sore to the Vistancia area. With the economy being what it is, I don't need another item to bring down the value of our properties."	The impact of the proposed transmission line on visual resources, including Vistancia, is analyzed in Section 4.14.
Walter "Skip" Zahlmann	666	UC	Content unrelated to analysis	
Denise & Chris Podschun	689.1	SUP PA	"I definitely support the Preferred Alternative location for the new APS lines along the north side of SR 74. Arizona has had enough difficulty in the housing market. We don't need to add to that by having visual blight with those huge ugly power lines."	Statement of preference.
Carole and Tom Maiello	690.1	SUP PA	"I am writing to express my support of the Preferred Alternative location for the APS lines along the north side of SR 74. This is the only option that makes sense, particularly for residents of Trilogy."	Statement of preference.
Sally and John Chesterman	691.1	SUP PA	"As Trilogy at Vistancia residents, we send this message in support of the power lines preferred alternative location to be along the north side of SR 74."	Statement of preference.
Walter "Skip" Zahlmann		UC	Content unrelated to analysis	
Mark and Barbara Jacobsen	694.1	SUP PA	"My husband and I wish to take a moment to contact you to express our strong support for the Preferred Alternative location for the APS power lines along the north side of SR74. Given environmental concerns and the concerns of area residents, we believe that the proposed Preferred Alternative location is the right way to go."	Statement of preference.
John & Mary Jo Packard	709.1	VIS	"It is unacceptable to have to suffer the visual impacts of the line if they are placed on the Carefree Highway alignment. We know such a move would make the lines visible from both Trilogy and many parts of Vistancia."	Statement of preference.
John & Mary Jo Packard	709.2	LU	"As State Route 74 is already designated as a transportation corridor it makes more sense to take advantage of the situation and place the power lines along an existing corridor."	Statement of opinion.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
John & Mary Jo Packard	709.3	LU	"SR74 is scheduled by ADOT to be expanded into a 6 lane highway. It will have 1000ft on each side of the road scaped for right-of-way. The APS lines should be installed adjacent to that 1000 ft right-of-way."	Statement of opinion.
John & Mary Jo Packard	709.4	GEN	"It is not environmentally reasonable to build the high-powered transmission lines through native desert."	Statement of opinion.
Donna Hanna	710.1	SUP PA	"As a Trilogy resident, I would like to comment on the State Route 74 as already being designated a transportation corridor. It only makes sense to place the APS power lines there. With the expansion of SR 74, APS will have plenty of space to install the necessary lines."	Statement of preference.
Dorthea and Dennis Hallberg	711.1	SUP PA	" We strongly support the Preferred Alternative location for the APS lines along the north side of SR 74."	Statement of preference.
Sierra Club on behalf of Francis Schilling	742		See Letter 116 - Added: "I have had my breath taken quite literally away so many times in my life by the natural beauty of our public lands and forests. No picture, no video, no second hand account and no great numbers of them could prepare one for the grandeur and the sheer immenseness of the beauty and majesty of those places. Those moments and that pristine majesty are priceless! What does it say about a country and its people that they would treat *our* natural public lands with such cavalier disrespect by allowing them to be used merely to quench the insatiable thirst of outrageous greed? Thus, I ask you to . . ."	Statement of opinion. Comment noted.
John Clemons	751.1	WLF	" As VP of the Arizona Desert Bighorn Sheep Society, I must say that the Society is for wind energy in concept. However, we would like the BLM and other officials involved with the NEPA process to be mindful of human encroachment issues and travel corridors between sheep mountain ranges."	This is not a wind energy project. Section 4.16 analyzes impacts to wildlife. Bighorn sheep are not addressed as mapped habitat does not occur within the Study Area.
James E Jaenicke	752.1	SAAA	"Originally I supported Alternative 1 of the Draft Statement where the Transmission line would cross over to the north side of SR 74 onto BLM land and then cross back over SR 74 back onto BLM land. However, I now support Alternative 2 where the transmission lines stay on the south side of SR 74 instead of Alternative 1. The additional cost it takes to cross over SR 74 twice and use BLM lands is not prudent or efficient construction and seems just plain silly. It seems there may be ulterior motives for Alternative 1 such as a developer (Sunland) protesting the southern Alternative 2 route. This was brought up in a public meeting I attended and was presented as an argument. In either Alternative 1 or Alternative 2 the developers residential buildings will see the transmission lines. I recommend and support Alternative 2 as the best overall solution!	Statement of preference.
John McCain, United States Senator Jeff Flake, United States Senator	753.1	SUP PA	"We are writing in support of the Bureau of Land Management's (BLM) selection of the Preferred Alternative…"	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
John McCain, United States Senator Jeff Flake, United States Senator	753.2	LU	"We are pleased to know that BLM included U.S. Air Force - Luke Air Force Base as a cooperating agency in the DEIS and, as reflected in the Preferred Alternative, acknowledged the importance of not interfering with flight operations."	Statement of preference.
John McCain, United States Senator Jeff Flake, United States Senator	753.3	GEN	"Luke Air Force Base is a vital component of our national security. We understand that the demands on our public lands are divers and complex, requiring a great deal of coordination with local governments and various stakeholders for BLM to balance multiple use demands. Therefore, we ask that you take into account the concerns of all parties, including the U.S. Air Force, and trust that the BLM's final decision will be in the public's best interest."	Statement of preference.
Julie Hollman	754.1	SUP PA	" Please place powerlines north of SR74, not in Trilogy Vistancia!!!!"	Statement of preference.
Dean Sloggett	755.1	SUP PA	" We are in support of the PROPOSED ALTERNATIVE which is on the north side of State Route 74. If they put the lines on the Carefree Highway alignment, they will be visible from Trilogy and many parts of Vistancia. State Route 74 is already designated as a transportation corridor. It makes sense to place power lines along an existing transportation corridor."	Statement of preference.
John and Linda Adkins	756.1	SOC	"…the addition of more lines would not only take away from the beauty of the landscape here at Trilogy/Vistancia; but would negatively impact our property values."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue.
Cynthia Bartolone	757.1	SUP PA	"I am a Trilogy resident and want to state my opposition to the placement of APS power lines in a location other than north of SR 74."	Statement of preference.
Cynthia Bartolone	757.2	OPP ALT3	"If they put the lines on the Carefree Highway alignment, they will be visible from Trilogy and many parts of Vistancia."	Statement of preference.
Eric Anderson, Transportation Director, Maricopa Association of Governments	758.1	LU	"MAG has…consistently held the position on this project that transportation corridors should accommodate roadways as well as other transportation uses such as bike, pedestrian, pipelines, transmission lines, where appropriate and compatible with the roadway."	Statement of preference.
Eric Anderson, Transportation Director, Maricopa Association of Governments	758.2	TRANS	"The preferred alternative states that a multiuse utility corridor would be established on BLM-managed public lands that would begin at the centerline of SR-74 and extend 0.5 -mile north, and also include the entire key-shaped block of BLM lands south of SR-74. It needs to be noted, that the SR-74 centerline will shift through this corridor to accommodate the ultimate SR-74 buildout concept that is proposed to include a 10 lane controlled access rural facility with a 60-foot wide open median. MAG supports the preferred alternative, however, details of the SR-74 expansion and the interaction of the proposed transmission line needs to be included in the EIS discussion to accurately portray the future transportation/utility corridor."	Under the Proposed Action/Preferred Alternative, the multiuse corridor would exist only on the key shaped parcel of BLM-managed public land south of SR 74, not north of SR 74. Additional information provided by MAG regarding roadway expansion was incorporated into Section 4.19.13, cumulative impacts to Transportation.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Buddy Redoble	759.1	OPP ALT3	"…I would like to void my strong opinion in opposition to the idea that you and your group would consider running APS high-powered transmission lines and towers on the 'Carefree Highway' alignment."	Statement of preference.
Buddy Redoble	759.2	LU	"ADOT has designated State Route 74 as a 'Transportation Corridor'. It is also reported that the good folks at ADOT are scheduled to expand SR 74 into a 'Six' (6) land highway including a 1000 foot easement on each side. In other words the APS lines could be installed adjacent to that 1,000 foot right-of-way on SR74."	Statement of preference.
Buddy Redoble	759.3	GEN	"…to run this project through native desert is not an environmentally reasonable or civically responsible act."	The EIS evaluates the environmental reasonableness of the alternatives considered, as well as those eliminated from detailed analysis, in Chapter 2.
Buddy Redoble	759.4	VIS	"Speaking as a Trilogy resident, and on behalf of those neighbors in Vistancia, your idea of putting the lines and towers on the Carefree Highway alignment where they will be visible from Trilogy and many parts of Vistancia is completely unacceptable."	Statement of preference.
Dennis Fisher and Peggy Fisher	760.1	SUP PA	" We wanted to add our names (Dennis Fisher and Peggy Fisher) to the many others who are in support of the Preferred Alternative location for the APS lines along the north side of SR 74. We live in Trilogy at Vistancia and do not want them in our area."	Statement of preference.
Jack and Linda Hart	761.1	SUR	We strongly support the Red Shirt Brigade in their choice of an alternate route for the power lines proposed.	Statement of preference.
Cayce and Debbie Shannon	762.1	OPP ALT 3	" We just want to thank you for not allowing more power lines to go through Vistancia. Not only are they a visual issue, but also a health issue."	Statement of preference.
Lynda Jefferson	763.1	SUP PA	"I am a resident of Vistancia; my family and I support the Preferred Alternative location for the APS lines along the north side of SR74."	Statement of preference.
Gerald W. Lee	765.1	SUP PA	"As a medium length (2 1/2 years) Trilogy resident, I totally support moving the lines to the BLM lands along the north side of SR 74."	Statement of preference.
Gerald W. Lee	765.2	VIS	"Although needed, the power lines are a blight against the beauty of the mountains. The current and future Trilogy residents would like an unimpeded view. It is bad enough we have to drive through the magnetic fields under the power lines crossing Vistancia Blvd."	The impact of the proposed transmission line on visual resources, including Vistancia, is analyzed in Section 4.14.
Dorothy and Wayne Dennis	767.1	SUP PA	"Please note that we, as Trilogy residents support the Preferred Alternative location for the APS lines along the north side of SR 74."	Statement of preference.
Ron Aames Peoria City Councilman	768.1	SUP PA	"As a member of the Peoria City Council, I express my support for the BLM Agency Preferred Alternative alignment for the proposed Arizona Public Service (APS) Sun Valley to Morgan 500/230 kV Transmission line. This alignment will least impact our citizens who live in northern Peoria, as hundreds of them have indicated at the public meetings you have held."	Statement of preference.
Lee & Debra McNaught	769.1	SUP PA	Our family supports the Preferred Alternative Route for APS lines along the north side of SR 74."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Paul R. Bernard	770.1	OPP ALT 3	"Please consider my request that no power lines be erected in the area of Trilogy or Vistancia. As a recent homebuyer here at Trilogy I feel that our property values will be adversely affected by unsightly towers and lines within close proximity and sight of our community. It is my understanding that an alternative is under consideration to have the power lines run parallel to Rte 74, a more sparsely populated area of Peoria. That proposal makes more sense to me as it will impact fewer homeowners."	Statement of preference.
Wayne Hitchcock	771.1	SUP PA	"I am writing you to indicate my support for the agreed upon APS power line route on BLM land along the north side of SR74. This would keep the proposed power lines out of the native desert north of Vistancia."	Statement of preference.
Dominic Bartolone	772.1	OPP ALT 3	"I am a Trilogy resident and want to state my opposition to the placement of APS power lines in a location other than north of SR 74. The power lines would blight our view of the mountains and desert and to avoid this should be placed on the north side of SR 74. To build high-powered transmission lines through native desert is not environmentally reasonable. If they put the lines on the Carefree Highway alignment, they will be visible from Trilogy and many parts of Vistancia. I am completely against this proposal and want to go on record as such. State Route 74 is already designated as a transportation corridor. It makes sense to place power lines along an existing corridor. SR 74 is scheduled by ADOT to be expanded into a 6 lane highway. It will have 1,000 feet on each side of the road scraped for right-of way. The APS lines would be installed adjacent to that 1,000 foot right-of-way. These are just some of the many reasons NOT to put these lines along the Carefree Highway but instead place them north of SR 74. Please recognize I did not move to this State and buy a home in a high class retirement community only to have to look at power lines right outside of my neighborhood."	Statement of preference.
Tom & Myrna Van Thiel	773.1	SUP PA	"We are in support of the proposed alternative which is the north side of State Route 74."	Statement of preference.
Herb & Sandra Cooley	776.1	SUP PA	"We support putting the proposed power lines along the northern side of SR74. Home owners in Trilogy/ Vistancia should not have these power lines visible from their communities when an already preferred alternative has been identified and is a designated transportation corridor."	Statement of preference.
John Dimina, Jr. ABBA ELECTRIC LLC	777.1	INFO	" Would you be so kind to advise us as to how we can bid on the above mentioned project? Our company has the licenses and experience to be able to perform on such a project. Thank you for all your help in this matter, and looking forward to hearing from you."	Solicitation of contract work. Request for information is beyond the scope of the BLM.
ROBERT & LINDA LINDGREN	778.1	SUP PA	"My wife and I both support the alternative location for the APS lines along the north side of SR 74. The visual impacts would hurt the beauty of our communities, we have a perfect alternative to keep the beauty of our communities and still put up the APS lines in a very practical place."	Statement of preference.
David and Sue Hamilton	779.1	SUP PA	"This email is in regards to the new APS line siting in Peoria. We support the PROPOSED ALTERNATIVE which is on the north side of State Route 74. The route that goes just North of Trilogy at Vistancia would be unsightly and would no doubt lower our property values."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Don Borland	781.1	SUR	" I am for the alternative Power line and hope that this gets passed."	Statement of preference.
Cheryl C Greenwood	783.1	SUP PA	" I TOTALLY SUPPORT the Preferred Alternative Location for the APS Lines along the NORTH Side of SR74."	Statement of preference.
Dorthea and Dennis Hallberg	784.1	SUP PA	" We strongly support the Preferred Alternative location for the APS lines along the north side of SR 74."	Statement of preference.
Renee Abbett	818.1	SUP PA	"We are writing in support of the BLM's selection of the Proposed Action as the Agency Preferred Alternative in the DEIS and BHRMPA for the APS Transmission Line."	Statement of preference.
Renee Abbett	818.2	LU	"WE must stress the need for consistent land planning for the successful implementation of solar projects. The Proposed action as the Agency Preferred Alternative is the only route consistent with local governmental plans including the City of Peoria."	Statement of opinion.
Renee Abbett	818.3	RENE	"The Proposed Action establishes critical redundancy and accessibility to renewable resource generation. This Proposed Action will help provide electrical reliability and reduce potential transmission congestion through an interconnected grid incorporating renewable energy and traditional energy throughout the Phoenix Metropolitan Area."	Statement of opinion. Chapter 1 has also been updated to include additional information on the relationship between this project and renewable energy transmission.
Renee Abbett	818.4	RENE	"This decision will also expand renewable energy use opportunities for the entire solar industry…"	Statement of opinion. Chapter 1 has also been updated to include additional information on the relationship between this project and renewable energy transmission.
Renee Abbett	818.5	RENE	"This Transmission line would be a vital link between the Phoenix Metropolitan Area and Renewable Energy projects in Arizona. It would increase the development timelines for several planned renewable energy projects including: 1. Luke Air Force Base Solar project (a planned 14mW project) 2. Solana Generating Station (a planned 280mW project) 3. Sonoran Generating Station (a planned 300mW project) 4. Star Solar Project"	Statement of opinion. Chapter 1 has also been updated to include additional information on the relationship between this project and renewable energy transmission.
Renee Abbett	818.6	RENE	"There are several areas within the DEIS that we feel need additional analysis to confirm within the DEIS the priorities and recent initiatives set by the BLM. One of these priorities is to "encourage and facilitate renewable energy development - solar, wind, and geothermal - on the Nation's public lands." This commitment has already been established from recent initiatives such as the Solar PEIS, the BLM's participation in the Rapid Response Transmission Taskforce and within the BLM's own Bradshaw-Harquahala Resource Management Plan, which supports the co-location of utilities including renewable energy infrastructure transmission lines and transportation ROW within designated corridors. The BLM priorities would only need be reaffirmed through further analysis within the DEIS on how promoting alternative energy can reduce greenhouse gas emission and the selecting of the proposed action will pose no unnecessary delays to the transmission line timeline."	BLM acknowledges in Section 1.5.2 that the project is consistent with its multiple use mandate, executive direction, and agency priorities. Additional information has been added to Section 1.5.2. Also, further analysis on how promoting alternative energy can reduce GHG is beyond the scope of this project.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Renee Abbett	818.7	GHG	"Greenhouse gas emissions as stated in the executive summary have no established method to assess impact but the analysis needs to continue with how beneficial alternative energy sources can be to this. The promotion of renewable energy reduces greenhouse gas emission, thusly benefiting the study area air quality. There is also no mention that the Preferred Alternative 500kV transmission line will impact the timeline for solar projects and also accelerate the solar generation stations or solar leases on BLM land."	Further analysis regarding development of alternative energy sources, their locations, and construction timeframes are beyond the scope of this project. Increased use of renewable energy and further development of renewable energy projects will reduce overall GHG emissions. GHGs are global pollutants; as a result, localized reductions in GHG emissions will not immediately impact the area.
Mark A. Nelson	819.1	SUP PA	" I would like to express my support for the power line route to be north of state highway 74."	Statement of preference.
Mark A. Nelson	819.2	LU	" Since the Arizona Department of Transportation has already secured approval for a multilane freeway through BLM land for highway 74 placing the power line along the northern edge of this corridor makes sense. Opponents of this alignment are not aware of these plans and are concerned about wildlife and scenic preservation. Since a mile wide swath will eventually be scraped for highway 74 the present pristine area they worry about will no longer exist. Once again I wish to support the route north of highway 74 above all other options. Lets confine all the environmental impacts to the same corridor."	Statement of preference.
Harvey and Lydia Friedman	821.1	SUP PA	"…I understand that now the BLM has identified and supports the proposed alternative route, the route we, the Red Shirt Brigade, support. That route of course is the PROPOSED ALTERNATIVE which is on the north side of State Route 74."	Statement of preference.
Harvey and Lydia Friedman	821.2	LU	"Any route on the south side of State Route 74 would severely impact both existing property as well as future development and is not compatible with the City of Peoria's General Plan for future developments along the south side of SR 74."	Statement of opinion.
Harvey and Lydia Friedman	821.3	GEN	"If the visual impact on Trilogy and many parts of Vistancia are not reason enough for your support of the PROPOSED ALTERNATIVE which is on the north side of State Route 74, then certainly the environmental impact that would occur were high-powered transmission lines to be built through native desert if the southern alternative were chosen is reason enough to support the PROPOSED ALTERNATIVE which is on the north side of State Route 74."	The EIS evaluates the environmental reasonableness of the alternatives considered, as well as those eliminated from detailed analysis, in Chapter 2.
Franklin Schiller Joanna Schiller	822.1	SUP PA	"We strongly support the current proposal for the APS Power Line project, which runs along the north side of State Route 74"	Statement of preference.
Franklin Schiller Joanna Schiller	822.2	LU	"This proposal utilizes State Route 74, which is already designated as a transportation corridor and is slated for eventual expansion to a six-lane highway. Therefore, it will have minimal effect on the environment and private property, especially that of existing individual homeowners and their families."	Statement of preference.
Franklin Schiller Joanna Schiller	822.3	LU	"In addition, this route is compatible with the City of Peoria's General Plan and future developments along the south side of SR 74."	Statement of opinion. Section 4.6 analyzes compliance with land use plans.
Gary Purkat	823.1	SR74	"…I wish to express my support for placing the APS powerlines along the state route 74 transportation corridor."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Gary Purkat	823.2	OPP UR	"We already have more than enough powerlines running between us and the 303 and do not want to contend with additional visual pollution as well as possible health risks of having more powerlines strung near our community."	Statement of preference.
Wayne & Bev Meddaugh	824.1	SUP PA	"we are supporting the group that is opting for preferred alternative location of the APS lines on the north side of State Route 74."	Statement of preference.
Arlene & Howard Mandel	826.1	SUP PA	"We as residents of Trilogy at Vistancia wish you to know that we agree with the proposed alternative which puts the transmission lines on the north side of Rt 74."	Statement of preference.
Connie Nichol	827.1	SUP PA	"Please recommend that the power lines be placed North of SR 74."	Statement of preference.
Steve Strecker	828.1	SUP PA	"I am writing you to express my support for the DEIS preferred alternative for the APS power lines on the North side of SR74."	Statement of preference.
Walter "Skip" Zahlmann	829.1	WLF	"There are wild burros on the land just north of present day Vistancia [Blackstone| and we have wild burros roaming free --north of Vistancia / Blackstone always up to Rte 74 and maybe up wards of the north side of Rte 74. Now did the BLM and the City of Peoria, do any studies or have the developers going back to around 2000 when Sun Belt Holdings and Vistancia were first proposed, along with now Diamond Ventures and Saddleback Heights and lake Pleasant Heights? Did all the above take into consideration the wild burros and their habitat and were any applications made, any studies made, anything regarding these protected animals --burros--and their habitat ????? Was the Department of Interior notified in any way, presented with any studies or EIS studies or of something similar to an EIS study and say the City of Peoria's Conservation Ordinance that would apply or any other requirements no matter how inconsequential they might have been to others at the time and up until the present time ???? So what about the wild burros that run wild in these areas ????????????? This would include State lands being used for the towers ?????????	Information regarding the existing burro herd management area on BLM-managed public lands within the Study Area was added to Section 3.16.
Walter "Skip" Zahlmann	830	UC	Content unrelated to analysis	
Lea Marquez Peterson, President/CEO, Tucson Hispanic Chamber of Commerce	832.1	SUP PA	"We are witing in support of the BLM's selection of APS' Proposed Action/Electric Transmission ROW Application as the BLM Agency Preferred Alternative in the DEIS."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Lea Marquez Peterson, President/CEO, Tucson Hispanic Chamber of Commerce	832.2	LU	"The majority of lands in Arizona are held by government agencies, which create dispersed population areas which need water, sewer, electricity, natural gas, communication, rail, and transportation utilities. All public and private utility providers are faced with the challenge of obtaining rights-of-way. Any action which facilitates and expedites right-of-way approval on public land; federal, state or local increases timely and efficient utility service delivery."	Statement of opinion.
Lea Marquez Peterson, President/CEO, Tucson Hispanic Chamber of Commerce	832.3	LU	"APS' Proposed action for an electric transmission ROW, is not a new disturbance, but an additional and co-located ROW within an established and Designated BLM Corridor."	Statement of preference.
Lea Marquez Peterson, President/CEO, Tucson Hispanic Chamber of Commerce	832.4	LU	"Federal guidance found in 43 USC 1763 Right-of-Way; criteria and procedures applicable for designation supports the utilization of rights-of-way in common to minimize adverse environmental impacts and the proliferation of separate rights-of-way. The current and potential future utilization of BLM's one-mile wide Designated Corridor along State Route 74 permits compatible and adjacent rights of way. Pursuant to 43 USC 1763, BLM's acceptance of APS' ROW Application/Proposed Action appropriately considers State land use policy, environmental quality, economic efficiency, national security, safety, and good engineering and technological practices. It further states that any existing transportation and utility corridors may be designated as transportation and utility corridors pursuant to this subsection without further review."	Statement of opinion.
Rick Brown, Portfolio Manager, Sabal Financial Group, LP	833.1	SUP PA	"We support the approval of the Proposed Action as the Agency Preferred Alternative…"	Statement of preference.
Rick Brown, Portfolio Manager, Sabal Financial Group, LP	833.2	OPP ALTS	"We…oppose Alternative 2, Alternative 3 and the Sub Alternative, which place the transmission line in closer proximity to exisitng and soon-to-be-built and occupied homes."	Statement of preference.
Rick Brown, Portfolio Manager, Sabal Financial Group, LP	833.3	LU	"The Proposed action as the Agency Preferred Alternative is the only route consistent with local governmental plans including the City of Peoria…."	Statement of opinion. Section 4.6 analyzes compliance with land use plans.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Rick Brown, Portfolio Manager, Sabal Financial Group, LP	833.4	LU	"In several instances, the DEIS characterizes Alternative 2 and Alternative 3 south of SR74 in Peoria which goes through private mater planned communities as similar to the Preferred Alternative which places the line north of SR74 on BLM land in Peoria and Maricopa County. The DEIS incorrectly characterizing zoned and legally vested land in varying stages of pre-development process as vacant, undeveloped, grazing land. Before a home is constructed within a planned community, there are many phases in the development process, not all viable development activity is visually apparent. There is insufficient or incorrect analysis in Alternative 2 and Alternative 3 in the resources areas of Land, Transportation, Recreation, Visual Resource and Socioeconomics."	Within applicable sections, revisions have been made to the EIS indicating that “undeveloped land” is not “raw land” and that developments on private lands are in various stages and generally describing a range of effects to developments.
Rick Brown, Portfolio Manager, Sabal Financial Group, LP	833.5	CE	"The National Environmental Policy Act (NEPA) requires the DEIS to analyze the impacts of each alternative on past, present, and reasonably foreseeable future actions or development. While the DEIS notes Lake Pleasant Heights as a Reasonably Foreseeable Development within Appendix 4B, the DEIS does not analyze the impacts of Alternative 2 and Alternative 3 to future residents of Lake Pleasant Heights, that could occupy homes prior to APS initiating construction of the line. The DEIS should consider future roads as foreseeable developments. Much of this has been excluded from the impact analysis and should be noted. In addition to the height and width associated with the ADOT and MAG future planning for SR74 to 6-10 lanes, regional arterials and streets are also planned south of SR74 within the Study Area identified in the DEIS. These future roads will connect master planned communities, create major intersections for commercial development and employment of centers and will connect with SR74 from the south, at major interchanges. A map showing the location of these planned roads relative to Alternative 2 and Alternative 3 and the change in traffic patterns and dispersal trips for these planned street and regional connection roads have been omitted from the DEIS analysis."	The impact of the transmission line on the views of future residents is analyzed in Section 4.19.15. Property value effects are analyzed based on the existing condition in Section 4.10. Any residences constructed between analysis and construction of the transmission line would be with the knowledge of the impending transmission line.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Rick Brown, Portfolio Manager, Sabal Financial Group, LP	833.6	SOC	"The devaluing of land due to transmission lines has been incompletely evaluated. There are two studies provided by the NAHB which were submitted to BLM, but was not included showing Tucson, Arizona; which should be considered a very relevant comparison, with market data resulting in a negative impact of over 25%. This study should be included as additional literature in Appendix 3A. DEIS making home price comparisons of 2005 and 2009 is either current or accurate for the Phoenix metro market. Consistent improving trends in housing is not recognized. Socioeconomic resource impacts will occur through the limitations to master planned community ability to develop. The decreased home values, prolonged timeline of sales and increased carrying costs to develop will have a much more drastic impact, which in some cases may force some property tax revenue, sales tax revenue, and construction tax revenue, impacts fees, and other city, state and federal income sources to never come to fruition. On page 4-105 the reports states that "the net effect on property tax revenue under Alternative would be beneficial, major and long term. These benefits would accrue to taxing entities and the beneficiaries of those taxes." The increased tax base from future developments will create a drastic difference between what property tax has been represented as grazing land in Alternative 2 and 3 as compared to the more accurate analysis of primary and secondary property taxes and sales taxes generated from suburban community densities. Homes similar to this area, would, on average, annually contribute approximately $500 to the County, $200 to the State Equalization tax, $100 to the City of Peoria, $1600 to the Peoria Unified School District, $450 to the Community College District, $200 to public services including fire, health care, flood control, and $1400 in bond tax. These taxation revenues would be threatened from both Alternative 2 and Alternative 3, as both effect hundreds to thousands of dwelling units; both by delaying them coming onto market or having lower assessed valuations. For each home devalued and/or not built, roughly $2000 would be stripped from the educational budget or a total of approximately $4000 per home in general property tax. Using these figures (provided), we believe the analysis of taxation and socioeconomic resources are incorrectly represented. There is a direct correlation between adding residential rooftops and the development of commercial, retail operations. The DEIS does not portray or analyze the basic economics of residential entitlement, predevelopment, development, marketing and home sales. These activities stimulate a local economy, pay for government, provide public community recreation, provide jobs, and should be accounted for within the socioeconomic impact. An analysis of Peoria's or any Phoenix metro city's source of revenue to their general fund, will illustrate the importance of private investment and commercial and residential development to the economy. While the DEIS is significantly detailed about the economic contributions of off highway vehicle recreation and grazing allotments; the economic contributions created by construction of community infrastructure associated with master planned communities and homes, as well as employment and revenues associated with the sale of goods and services during home construction and occupancy have been ignored in the DEIS socioeconomic analysis."	The referenced NAHB study was reviewed and deemed not applicable to the analysis of impacts to private property values because it deals with compensation for diminished property values caused by fear of EMFs. The other study provided, authored by Kurt Kielish was included in the literature review. Home values are not used for any impact analysis in Section 4.10. Changes in the real estate market would not change the impact of the transmission line on home values. Regardless of the present value of any property, the addition of the transmission line would affect the value of the property on a percentage basis, as described in the cited source contained in the literature review in Appendix 3A. The effect of potentially inhibiting development because of the value of the property/homes being reduced by the presence of the transmission line would be an indirect effect and is addressed in Section 4.10, as applicable. The potential impact on taxes would be a cumulative impacts issue, and Section 4.19.11 is revised, as applicable. The detail provided in the EIS analysis of socioeconomic impacts of OHV recreation attempts to describe the current contributions of OHV recreation to the local economy, and the impact the transmission line would have on that economic driver. The comment is suggesting that the transmission line would inhibit anticipated future economic drivers, which is a type of analysis, and is now addressed in Section 4.19.11, as appropriate.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Rick Brown, Portfolio Manager, Sabal Financial Group, LP	833.7	VIS	"The DEIS states that the impacts to visual resources in Alternative 2 and Alternative 3 would result in a contrast that would be weak and the long term impact would be negligible. These conclusions are not based on a proper analysis required through Key Observation Points guidelines, such that Key Observation Points (KOPs) should first identify residential viewers, including those in reasonably foreseeable developments."	Due to private land access issues and the currently undeveloped nature of the areas adjacent to Alternative 3, limited KOPs in this area were deemed adequate for impact analysis.
Steve Saway	834.1	OPP PA	"I do not support the APS Proposed Action and BLM's Preferred Action."	Statement of preference.
Steve Saway	834.2	SRMA	"The BLM Resource Management Plan (RMP) for this area was developed after years of very extensive public involvement and collaboration. The results of that collaboration are reflected in the RMP decisions. The area envisioned for the transmission line project north of Hwy 74 was not identified as a utility corridor. Rather, that area is part of the Castle Hot Springs Management Unit. This entire management unit was allocated to the Castle Hot Springs Special Recreation Management Area. This decision was not made lightly. It reflects the outstanding recreation and resource values within the management unit and particularly within the Hieroglyphic Mountains Recreation Management Zone. The desired future conditions for this management unit include an emphasis on preserving open space and scenic/visual qualities and maintaining an array of recreation settings for both motorized and non-motorized activities. This area also has other important resource values, including category 2 desert tortoise habitat and class II visual resources."	Section 2.10 describes the rationale for why the BLM is selecting the Proposed Action as the Agency Preferred Alternative.
Steve Saway	834.3	OHV	"The area north of Hwy 74 has been developed and managed as a highly popular off-highway vehicle (OHV) destination. Considerable investment has been made to develop the Boulders Staging Area and network of trails in the Hieroglyphic Mountains, including investments from both BLM resources and State of Arizona OHV funds. It provides an important venue for both local and non-local visitors to ride in a designated OHV area that promotes safe and responsible riding. This area has proven to be a successful showcase of how the BLM and State of Arizona partnership can offer a safe, responsible, and popular venue for OHV recreation. The growing number of user visits to this area is a tribute to the success of this partnership. It should be recognized too that this venue has offered a great opportunity for the Arizona OHV Ambassador Program to promote safe and responsible riding."	Applicable revisions and additional mitigation measures have been added to Section 4.9 addressing impacts to OHV recreation.
Steve Saway	834.4	OPP RMPA	"In my view, the BLM should not select the Proposed Action as its Preferred Action because that would disregard (if not denigrate) the decisions made in the RMP to manage this area for its scenic and recreational values. Placing a utility corridor north of Hwy 74 would change the character and integrity of the BLM lands it would traverse. Plus in my view, it would create unacceptable adverse impacts to the recreational uses and public enjoyment of these lands. It could possibly result in OHV users going to other, less appropriate riding areas with greater potential for user conflicts. Why jeopardize the recreational successes BLM has achieved in this area?"	Section 2.10 describes the rationale for why the BLM is selecting the Proposed Action as the Agency Preferred Alternative. Applicable revisions and additional mitigation measures have been added to Section 4.9 addressing impacts to OHV recreation.
Steve Saway	834.5	SAAA	"I believe the BLM should give serious consideration to selecting Alternative 2 or Alternative 3 as the agency's Preferred Action. That would sharply reduce the utility corridor's conflicts with the RMP decisions and the adverse impacts it poses to recreational uses and public enjoyment of BLM lands."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Lynn Hodge	835.1	SUP PA	"I support the position of the City of Peoria for the APS line route."	Statement of preference.
Norman (Sonny) Sonnenberg Marilyn Sonnenberg	855.1	GEN	"The noise and dreadful looking power lines that would be hanging near this beautiful area is really very upsetting…"	The visual and noise impacts, and mitigation measures addressing those impacts from the proposed transmission line are analyzed in Sections 4.7 and 4.14, respectively, of the EIS.
Norman (Sonny) Sonnenberg Marilyn Sonnenberg	855.2	SOC	"The environment impact on this community if they were too located here would be devastating to both Value and desire to live here."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue.
Norman (Sonny) Sonnenberg Marilyn Sonnenberg	855.3	NOISE	"The NUMBER #1 complaint was that the hissing noise that they created was extremely loud and it was a continues noise 24 hours a day. It will drive you absolutely nuts to listen to that."	The impacts from and mitigation of noise generated by the proposed transmission line are analyzed in Section 4.7.2.1 of the EIS.
Norman (Sonny) Sonnenberg Marilyn Sonnenberg	855.4	SUP PA	"I am very pleased to know that BLM has stated great support for the Certificated Route and ask us for our support to that decision, you have our full support for that and it is a decision that is best for the environment impact. The choice that the Arizona Corporation Commission had agreed to by moving the lines out of this community and on public land north of State Route #74 to permanently secure that location is by far a superior choice for this community."	Statement of preference.
Douglas Pierson	856.1	SUR	"I am requesting that you move forward with the certificated route according to your mapped and outlined areas shown for the transmission lines to be placed. I feel this would be detrimental to the village as for placement, health wise, as well as the economic impact if it were to be placed differently."	Statement of preference.
Dana Pagliarulo	859.1	SUP PA	"By proposing that APS erect the power lines along the preferred Northern route along Route 74, you save Vistancia from blemishing the quality of life here and the value of our homes and this community."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue.
Mary Taussi	860.1	SUP PA	"I support the certificated route (Alternative 1) which is also supported by APS, BLM, various political officials, AZ State Land Department and many more."	Statement of preference.
Mary Taussi	860.2	OPP ALT3	"Power lines do not belong in or near the Vistancia community. I can't imagine how this would affect our health, property values and wildlife."	Statement of preference.
Joseph Taussi	861.1	SUP PA	"As a resident of Vistancia, I fully support the certificated route for the APS transmission line (Alternative 1) as the best possible route."	Statement of preference.
Jill Pierson	862.1	VIS	"Unsightly power lines disrupt the natural beauty of our desert. They stick out like sore thumbs, tower over buildings and natural landscape…"	The impact of the proposed transmission line on visual resources, and specifically the visual resources north of SR 74, is analyzed in Section 4.14.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jill Pierson	862.2	NOISE	"They…generate a constant annoying "humming" noise, all of which is inconsistent with harmonious living."	The impacts from and mitigation of noise generated by the proposed transmission line are analyzed in Sections 4.7.2.1 of the EIS.
Jill Pierson	862.3	SOC	"The presence of power lines also decrease the value of land, thereby decreasing the tax base. All taxpayers would certainly be negatively impacted. Land and homes that are built near power lines are extremely or nearly impossible to sell as demonstrated in a neighboring community off Vistancia Blvd, Coldwater Ranch. The majority of the homes are vacant and remain unsaleable due to the close proximity to the power lines. When in the area, a constant audible sound can be heard emanating from the power lines."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue. The impacts from and mitigation of noise generated by the proposed transmission line are analyzed in Sections 4.7.2.1 of the EIS.
Jill Pierson	862.4	PH&S	"Studies have been conducted whereby the results indicate our health is compromised by residing close to power lines. They are considered to be a health hazard."	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.
Jill Pierson	862.5	SUP PA	"I support The Bureau of Land Management's recommendation of Alternative 1 (the certificated route) and am opposed to all other alternatives."	Statement of preference.
Douglas and Mary Johnson	863.1	SUP PA	"We (Doug and Mary) appreciate the opportunity to express our support for "Alternate 1," the certified route, which runs along the north side of SR-74."	Statement of preference.
Carl Johnson	864.1	SUP UR	"We support the present certified route to be installed by APS."	Statement of preference.
Carl Johnson	864.2	OPP ALT3	"We don't want any power grids, substations or power line in Vistancia."	Statement of preference.
David Goldstein, President, Diamond Ventures	865.1	SUP PA	"Diamond Ventures supports the Preferred Alternative Route for the Transmission Line because it would: (1) further the national policy of promoting renewable energy and increasing reliability of the electric grid; (2) create jobs; (3) protect private property; (4) be consistent with state and local planning; and (5) promote the multiuse of a BLM designated corridor."	Statement of preference.
David Goldstein, President, Diamond Ventures	865.2	OPP MUC	"Diamond Ventures, however, does not support the amendment of the BHRMP as provided for in the Preferred Alternative because the amendment is not consistent with the ROW application, sufficient rationale and analysis is not included in the DEIS, private property surrounds the 1,013 acres and the DEIS states that there would be a change in management of lands by BLM. Co-location and future development projects could occur in the 1,013 acre multi-use corridor with accompanying impacts to resources. Diamond Ventures' is concerned that certain aspects of the proposed BHRMP amendment are unnecessary and could negatively impact private properties and recreationists, including Saddleback Heights."	Section 1.3.2 explains BLM's need to amend the RMP. Section 2.10 describes the rationale for the Agency Preferred Alternative and Section 2.3 describes the reason for the RMPA. Further, Section 4.1.3 indicates that analysis of impacts resulting from future development within a multiuse corridor would be required prior to authorization. The analysis done at that time would address any potential impacts to surrounding private lands.
David Goldstein, President, Diamond Ventures	865.3	LU	"the FEIS must not characterize reasonably foreseeably development such as Saddleback Heights as "vacant" or "undeveloped" land when considering the environmental impact the transmission line alternatives will have on the fifteen identified resources on private property."	Revisions have been made to the EIS indicating that "undeveloped land" is not "raw land" and that developments on private lands are in various stages of planning and generally describing a range of effects to developments.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.4	RENE	"…the Transmission Line would provide a vital link between the Phoenix metropolitan area and renewable energy projects in Arizona... To be consistent with federal renewable energy policy, the FE IS should reflect the fact that the Project would assist the region in meeting the national policy of providing renewable energy."	BLM acknowledges in Section 1.5.2 that the project is consistent with its multiple use mandate, executive direction, and agency priorities. Additional information has been added to Section 1.5.2.
David Goldstein, President, Diamond Ventures	865.5	GEN	"The FEIS must also evaluate the amount of time and resources each alternative will take to proceed through any State or local permitting processes compared to the Preferred Alternative given the Department of the Interior's interest in expeditiously increasing the amount of renewable energy generation and transmission."	Section 4.10.2.4, No Action Alternative was revised to include discussion of the need for APS to return to the ACC process, and address potential indirect socioeconomic effects of that action.
David Goldstein, President, Diamond Ventures	865.6	SOC	"In the recent austere economic times, job creation is essential to the recovery of the national economy, especially areas that were the most hard-hit in the years between 2007 to 2009 such as in the American Southwest. Adopting the Preferred Alternative Route will accelerate the creation of jobs for the region in the construction of the Transmission Line and the potential for development of renewable energy generation sites, facilitating the construction of homes and commercial, retail, office, industrial, civic buildings will create both temporary employment as well as permanent jobs and will generate revenue for the region in fees and taxes. Therefore, the FEIS should consider the positive effect the Transmission Line will have on the local economy and job creation. The FEIS must also consider the reasonably foreseeable timing of those jobs compared to other DEIS alternatives."	Sections 4.10.2, Alternative 2, Alternative 3, and the No Action Alternative were revised to include discussion of the need for APS to return to the ACC process, and address potential indirect socioeconomic effects of that action.
David Goldstein, President, Diamond Ventures	865.7	SOC	"In addition, if a high voltage transmission line such as the one associated with the Project is located on private lands as proposed in Alternatives 2 and 3, it will forestall certain phases of the development and adversely impact the assessed value of residential and commercial properties on privately-owned land. To be consistent with national policy, public lands should be used for public purposes such as the production of renewable energy. See P. L. 109-58, § 211. Private land owners should not bear the burden of implementing the Administration's policy when a suitable and designated corridor already exists on public land for the Transmission Line."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
David Goldstein, President, Diamond Ventures	865.8	PH&S	"Moreover, siting the Transmission Line within the Preferred Alternative Route on public lands would lessen homeowners' concerns regarding the potential public safety and health risks associated with prolonged exposure to a high voltage transmission line. Accordingly, to preserve property values and to avoid any public safety and health fears, the FEIS should adopt the Preferred Alternative Route."	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.
David Goldstein, President, Diamond Ventures	865.9	LU	"The Preferred Alternative Route is within an existing one-mile wide designated corridor on BLM lands, and ADOT has indicated that the Transmission Line would be a compatible use within its transportation easement. The shared use of the designated corridor with the Transmission Line would also minimize any environmental disturbance associated with the line. Therefore, to be consistent with federal land policy and to minimize any environmental negative impacts associated with the corridor, the FEIS should adopt the Preferred Alternative Route."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.10	LU	"The FEIS should also consider the impact each alternative would have on the capitol improvements, use, and expansion of SR 74."	The EIS contains text additions to Sections 3.6.3 and 4.6.2.2.
David Goldstein, President, Diamond Ventures	865.11	GEN	"the FEIS should give considerable weight to the ACC proceedings and decision as well as the significant community support for the Preferred Alternative Route that has been consistent from 2010 forward."	NEPA requires that a Federal Agency give weight to the entire human environment.
David Goldstein, President, Diamond Ventures	865.12	GEN	"The FEIS should also recognize that any other action is likely to significantly delay the implementation of this line by increasing the needed review time at both the state and local level by essentially restarting the approval processes with entities such as the ACC."	Chapter 2, Alternatives 2, 3, and the Sub-alternative, and Section 2.7 (Alternatives Eliminated from Detailed Analysis), and Section 4.10.2.4 - No Action Alternative were revised to include discussion of the need for APS to return to the ACC process, and address potential indirect effects of that action.
David Goldstein, President, Diamond Ventures	865.13	OPP MUC	"Although Alternative 1 would use the same route as the Preferred Alternative, it would establish a multiuse utility corridor on BLM-managed lands that would begin at the centerline of SR 74 and extend 0.5 mile north, and also include the entire block of BLM lands south of SR 74, potentially allowing for uses incompatible with residential and commercial development."	Under the Proposed Action/Preferred Alternative, the multiuse corridor would exist only on the key shaped parcel of BLM-managed public land south of SR 74, not north of SR 74. Section 2.10 provides the description of the Agency Preferred Alternative. The decision for proposing to manage this parcel of land was made in order to avoid potentially having to go through the RMPA process again for any proposed and future right-of-way requests.
David Goldstein, President, Diamond Ventures	865.14	OPP RMPA	"An amendment, however, to the BHRMP is unnecessary… the siting of the Transmission Line would not be a "major change" to the use or to BLM's policy. The BHRMP provides that BLM is encouraged to use joint uses of existing corridors and promote renewable energy. The route selected in the Preferred Alternative fits squarely within these directives. Consequently, it would not be a "major change" for the FEIS to adopt the Preferred Alternative. 43 CFR 1610.5-4 provides that resource management plans and supporting components may be changed by a Maintenance Action to reflect minor changes in data and to further refine or document a previously approved decision incorporated in the plan. Corrections and minor clarifications of resource management plans are also recorded by errata."	BLM finds that consideration of the Proposed Action, Alternative 1 and Alternative 2 would require the RMP to be amended to comply with the FLPMA as explained in Section 1.3.2.
David Goldstein, President, Diamond Ventures	865.15	OPP RMPA	"As described above, the Transmission Line is clearly consistent with the BHRMP's broad-based goals and objectives of promoting renewable energy and utilizing existing corridors for joint use. Therefore, no amendment to the plan is necessary. Requiring an amendment to the plan would be applying inflexible standards and prescriptions that should not be applicable to situation such as this where the Transmission Line fits squarely within the plan's goals and objectives."	BLM finds that consideration of the Proposed Action, Alternative 1 and Alternative 2 would require the RMP to be amended to comply with the FLPMA as explained in Section 1.3.2.
David Goldstein, President, Diamond Ventures	865.16	OPP MUC	"The dimensions for the proposed multiuse corridor in the Preferred Alternative are significantly different from the Proposed Action and existing designated corridor along SR74 and are not necessary to evaluate the subject ROW application. Moreover, the designation of 1,013 acres south of the SR74 on BLM land as multiuse and VRM IV allows a number of types of disturbances of BLM lands, including, but not limited to, cell towers and gravel pits, which would negatively impact private property values, including reasonably foreseeable developments such as Saddleback Heights."	BLM can amend the RMP under FLMPA to address needs as they see necessary to address management issues. Further, Section 4.1.3 indicates that analysis of impacts resulting from future development within a multiuse corridor would be required prior to authorization. The analysis done at that time would address any potential impacts to surrounding private lands.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.17	OPP MUC	"…the DE IS does not include any analysis or justification for such a broad designation. Nor does it provide any methodology for how BLM determined the amount of acreage. It also fails to discuss how the designation would impact neighboring private properties."	Section 4.1.3 indicates that analysis of impacts resulting from future development within a multiuse corridor would be required prior to authorization. The analysis done at that time would address any potential impacts to surrounding private lands.
David Goldstein, President, Diamond Ventures	865.18	VIS	"The DEIS states that the Proposed Action would meet VRM Class objectives on approximately half of the VRM Class Ill designated lands north of SR7 4 and approximately 75% of the Class Ill lands south of SR7 4. It further states that in the area where the transmission line would dominate the view on BLM management public lands it would not affect the Scenic Quality rating assigned to the Scenic Quality Rating Unit and there would be no effect to the Visual Resources Inventory. The transmission line would reside within a 200' ROW and the DEIS states that impacts are limited to within 200' of the transmission line. For the seven miles of BLM lands north and south of SR74,this would equate to 339 acres of impact. The DEIS does not contain analysis and methodology supporting the decision to change 2,362 acres north of SR7 4 and 1,021 acres south of SR74."	The methodology is provided in Section 4.14.1 and analysis is provided in Section 4.14.2 of the EIS.
David Goldstein, President, Diamond Ventures	865.19	OPP MUC	"The DEIS refers to the BLM land south of SR7 4 as the "key-shaped public land piece". The location and configuration of the parcel and it being surrounded on three sides by private land with reasonably foreseeable development do not support designating the entire BLM parcel and acreage beyond what is needed for the Proposed Action as multi-use corridor. Therefore, any multiuse designation in the FEIS should be limited to the existing designated corridor. At a minimum, the FEIS must provide the justification and methodology for the designation and analyze how the amendment would impact nearby private property, including reasonable foreseeable development such as Saddleback Heights."	BLM can amend the RMP under FLPMA to address needs as they see necessary to address management issues. Further, Section 4.1.3 indicates that analysis of impacts resulting from future development within a multiuse corridor would be required prior to authorization. The analysis done at that time would address any potential impacts to surrounding private lands.
David Goldstein, President, Diamond Ventures	865.20	GEN	"These directives in the BHRMP create a potential inconsistency between the goal of minimizing visual impacts and the Administration's policy of promoting renewable energy. If amended, therefore, the BHRMP should be amended to reflect the Administration's "highest" national priority of promoting renewable energy projects, particularly when they can be located within existing designated corridors."	The RMP amendment is appropriate as discussed in Sections 1.3.2, 1.5, and 2.3.
David Goldstein, President, Diamond Ventures	865.21	LU	"…Designating the subject transportation corridor as a multiuse corridor would minimize any environmental impacts while satisfying the national policy of promoting renewable energy. Therefore, if amended, the BHRMP should be revised to designate the existing SR-74 designated corridor as a multiuse corridor that would accommodate the Transmission Line as well as the planned expansion of SR74."	Section 2.10 describes the rationale for the Agency Preferred Alternative.
David Goldstein, President, Diamond Ventures	865.22	LU	"Although the DEIS acknowledges that a significant amount of acreage is slated for commercial and residential development by Saddleback Heights, it treats the land as "vacant or undeveloped". The private land in Peoria impacted by Alternatives 2 and 3 should not be characterized as "vacant and undeveloped". Rather, the private land is planned, approved, permitted, and the commercial and residential development is reasonably foreseeable. Moreover, there are significant ongoing investments being made in the development of Saddleback Heights. Accordingly, the FEIS should analyze Saddleback Heights as a reasonably foreseeable development as opposed to "vacant or undeveloped" land.	Revisions have been made to applicable sections of the EIS, to indicate that “undeveloped land” is not “raw land” and that developments on private lands are in various stages of planning, and generally describing a range of effects to developments.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.23	SOC	"The DEIS acknowledges that "[p]roximity of a property to a transmission line could be a significant factor for impacts on property values", but states that "properties beyond 200 feet did not experience any negative price effects." 3.10.7.3,. 3-107. Under NEPA, the DEIS must describe the analytical methodology sufficiently so that the reader can understand how the analysis was conducted and why the particular methodology was used."	Appendix 3A was revised to incorporate additional sources that provided comments on the EIS. Section 4.10 was revised to change the methodology for determining property value impacts to private property in conjunction with the additions to Appendix 3A.
David Goldstein, President, Diamond Ventures	865.24	SOC	"In Valuation Guidelines for Properties with Electric Transmission Lines, Kurt C. Kielisch, ASA, IFAS, SRIWA, RIW-AC states that: "Electric transmission lines do not directly serve electric utility customers: their power is distributed from distribution point to distribution point. Transmission lines wires are not insulated and are bare. His report researched the impact of electric transmission lines including collecting and indexing research studies, published articles and transcripts in order to determine public perception of high voltage transmission lines. His summary report details twelve specific case studies of the impact of electric transmission lines on real estate values. He recounts information from one national study on the perception of power lines on value and marketing time, that states that 83% of real estate appraisers surveyed said that the presence of power lines negatively affected property values. He also cites a study from the Houston area that found that buyers refused to look at properties that adjoined a power line easement and that such properties took much longer to sell. Numerous studies cited in his report showed that land and homes impacted by electric transmission lines had negative impacts to assessed values of greater than 30%. He also reports on one subdivision where the lots abutting the transmission easements were twice the size of non-easement lots. When factoring in the size of lots, the overall loss of value to the project is even greater. Another study showed that a pending 345kV line was the principal reason the buyer gave for a low offer. A Wisconsin sales analysis recounted a transaction on a property with a home appraisal for $221,000. After installation of a 345kV and 138kV transmission line, as well as the property premises and remodeling of the residence, the home was placed on the market at the revised appraisal of $179,900. The home sold for $128,500. The Kielisch report concludes that the actual loss to property value attributable to an electric transmission line depends on numerous factors, but that significant negative effects can be stated with a high degree of certainty. Here, the DEIS does not describe the methodology used, nor does it discuss what assumptions, including the geographic and temporal scope of the analysis, were made in reaching this conclusion. Accordingly, the FEIS must describe how this conclusion was reached and what assumptions were made in reaching these conclusions."	Appendix 3A was revised to incorporate additional sources provided with comments on the EIS. Section 4.10 was revised to change the methodology for determining property value impacts to private property in conjunction with the additions to Appendix 3A.
David Goldstein, President, Diamond Ventures	865.25	LU	"…to the extent that any of the alternatives would result in a piece-mealing of Saddleback Heights, or other reasonably foreseeable developments, the FEIS should consider the impact that any of the alternatives would have on the State Trust Land within Saddleback Heights."	Impacts to State Trust land are analyzed throughout Chapter 4; however, any impacts to the parcel of State Trust land would be resource-specific. Most impacts are aggregated.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.26	LU	"The DEIS discusses Alternatives Considered but Eliminated. In several of these alternatives, the conclusion was that the alternative was not environmentally feasible because it interrupted the continuity of portions of a development, be adjacent to a proposed community and be in close proximity to residences. These statements and rationale are also applicable to Alternative 2 and Alternative 3 and provide additional support the Preferred Alternative and the distinctions between the Preferred Alternative and the alternatives that interrupt, bisect, and are adjacent to developing residential neighborhoods."	Additional information was added to the Land Use Section 4.6 acknowledging that the transmission line under Alts 2 and 3 would bisect Saddleback Heights and any other developments. This would add accurate information to the EIS, but would not change the analysis. Further, please note that bisecting or bifurcating development property was not the sole factor in reaching a decision as to whether or not an alternative was dismissed from detailed analysis.
David Goldstein, President, Diamond Ventures	865.27	SOC	"Moreover, because the same analysis regarding State Land potential master planned communities discussed above applies to reasonably foreseeable development on private lands, the FEIS should also consider the impact the alternatives would have on the nature, make-up and values of neighboring master-planned communities such as Saddleback Heights."	See Section 4.10 for analysis of impacts to the value and usability of private lands for development.
David Goldstein, President, Diamond Ventures	865.28	GEN	"The DEIS states that the Proposed Project spans 38 miles on "mostly non-public land". This is not accurate; the majority of this transmission line spans public land."	The majority of lands crossed by the proposed ROW would be State trust lands. The ASLD does not consider State trust lands to be “public land” in the same sense that BLM-managed public lands are “public land.” Therefore the statement as quoted is correct and no change was made as a result of the comment.
David Goldstein, President, Diamond Ventures	865.29	GEN	"The DEIS suggests that its analysis should assess costs associated with restoration of OHV areas disturbed by construction activities; we would question why the DEIS limits its assessment of this restoration only to OHV areas."	This was a scoping issue – that OHV trails be rehabilitated after construction, thus was described and summarized in this specific section.
David Goldstein, President, Diamond Ventures	865.30	SOC	"In addressing the socioeconomic impacts of the Proposed Action and Alternatives, the Executive Summary suggests that its baseline for analyzing the impacts to area property values should be "the already weakened housing market." In fact, the housing market, especially in the Phoenix Metro area, is on the rebound, and this should be reflected in the DEIS? Before Real Estate Consulting analysts state that new housing permit activity was up 60% in the Phoenix Metro last year, and overall pricing increased 10% in 2012. The housing market in North Peoria and the real estate Sub-Market statistics for Peoria exceed the regional averages."	Impacts to socioeconomic resources are described in Section 4.10. Changes in the real estate market would not change the impact of the transmission line on home values. Regardless of the present value of any property, the addition of the transmission line would affect the value of the property on a percentage basis, as described in the cited source contained in the literature review in Appendix 3A.
David Goldstein, President, Diamond Ventures	865.31	LU	"The DEIS Executive Summary states that the analysis under the DEIS should "consider the quality of the lands north of SR74 for conservation management by the BLM as opposed to expanded development into BLM lands. " We object to this characterization of the transmission line's placement north of SR74, and believe instead that it represents co-location of transmission with a transportation corridor."	This comment is quoting from Section ES.6.1, Public Scoping. The Executive Summary summarizes information that was gathered during internal and external scoping, and is presented in Table 1.8-2. The referenced text is stating the issue as it was raised during scoping, and is not BLM’s characterization of the project.
David Goldstein, President, Diamond Ventures	865.32	CUL	"The DEIS Executive Summary states that "Tribes have expressed concern regarding amending the Bradshaw-Harquahala RMP and impacts to prehistoric sites" but does not make clear which Tribes have submitted."	It is irrelevant to the impact analysis for the project regarding what specific Tribes have expressed concerns. See Sections 1.6, 3.3.7, 4.3, and 5.5. Section 3.3.7 and 5.5 both indicate which Tribes the BLM is consulting with. Table 5.5-1 in Section 5.5 provides a table that includes the concerns of each Tribe.
David Goldstein, President, Diamond Ventures	865.33	GHG/CC	"The DEIS does not acknowledge that Green House Gas Emissions are reduced by the development of renewable energy resources."	Section 4.19.3 has been revised to state that development of renewable energy sources will reduce GHG emissions.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.34	AIR	"The DEIS states that particulate effects between the Proposed Action and Alternative Two is "essentially the same, just slightly lower." However, this conflicts with Tables 4.2-2 and 4.2-79, which show that the Proposed Action's PM-1 0 and PM-2.5 levels would be considerably lower than Alternative Two, at 4.33 and 1.08 respectively for the Proposed Action, and 28.6 and 6.1 for Alternative Two. If the Tables are accurate, we respectfully submit that the narrative of the DEIS should be corrected."	Totals for PM-10 and PM-2.5 in Table 4.2-7 have been corrected. No changes have been made to the text as it now accurately reflects the information in the tables
David Goldstein, President, Diamond Ventures	865.35	RENE	"The DEIS lacks any assessment of the positive impacts that the facilitation of solar energy via the construction of the Sun Valley to Morgan transmission line would have on air quality in Maricopa County. This was specifically recognized in the BLM's Restoration Design Energy Project, which acknowledged the estimated 1,700 pounds of C02 which would be annually displaced per megawatt-hour of renewable energy produced."	Cumulative effects to Air Quality and Climate Change in Section 4.19.3 have been revised to consider the cumulative impact of facilitation of renewable energy.
David Goldstein, President, Diamond Ventures	865.36	CUL	"The impacts of the transmission line placed on the south side of SR74 to Saddleback Heights cultural resources were presented to the ACC during the Line Siting case by Suzanne Griset, PhD Anthropology."	All applicable and relevant information was used for the analysis presented in the EIS.
David Goldstein, President, Diamond Ventures	865.37	CUL	"In evaluating Cultural Resource impacts, the DEIS omits any analysis of impacts on private lands which were considered as part of the underlying ACC case. Similar to the BLM's analysis of impacts to State Lands, impacts to private lands should enhance the DEIS analysis and ultimately direct appropriate use of BLM lands."	In Section 3.3.4 the EIS states, "To fulfill its responsibilities under Section 106 and as a condition of a ROW grant, BLM would require Class III inventories of private lands to identify and assess the effects on any historic properties prior to development." Further, a supplemental inventory was conducted that included private lands where right-of-entry was granted for cultural resource surveys. The results for private land were added to the EIS.
David Goldstein, President, Diamond Ventures	865.38	LU	"The amount of acreage and land uses within Saddleback Heights impacted by the transmission line placement on the south side of SR7 4 was presented by Ken Abrahams during the ACC Line Siting case and to the BLM by Wendell Pickett, Grey Pickett during the Sun Valley to Morgan Transmission Line Seeping meeting."	All applicable and relevant information was used for the analysis presented in the EIS.
David Goldstein, President, Diamond Ventures	865.39	LU	"The DEIS quotes the FLPMA regarding protection of resources and public participation, but does not quote the FLPMA regarding minimizing proliferation of separate rights of way and the requirement of utilization of rights-of-way in common to the extent practical."	Text addition made per comment to Section 3.6.2.1.
David Goldstein, President, Diamond Ventures	865.40	LU	"The DEIS does not reference the BLM Land Use Planning Handbook H-1601-1, the Department of Energy National Electric Transmission Congestion Study, or the BLM 2800 ROW Manual/Handbook as relevant in the section referencing Federal Law, Ordinance, Regulation and Standards."	A text addition was made to Section 1.3.2 referencing Handbook H1601-1 in conjunction with the Need for BLM Action (related to the need to amend the Bradshaw-Harquahala RMP). Consideration of the handbook in conjunction with laws, ordinances, regulations and standards in Section 3.6.2 is not relevant to the analysis of impacts to Land Use. While the Department of Energy National Electric Transmission Congestion Study (2009) indicates that the Phoenix area is constrained, particularly for transmission of electricity generated through solar or geothermal, this information is not relevant to the analysis of impacts to land use, and has not been referenced. Manual Series 2800 provides BLM policy and administrative guidance for issuing ROWs, and is not relevant to the Land Use discussion in Section 3.6.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.41	LU	"The DEIS does not acknowledge that the Land Use and Realty provisions of the Castle Hot Springs Management Unit may need to be amended as would several Record of Decision maps."	Land Use Decision LR-30 states, "No new utility corridors are designated within the MU." Under the Proposed Action, a utility corridor would be established within the MU. Text was added to Section 1.3.2, and Table 1.5.1, Decisions to be Made, was revised to indicate that LR-30 would be eliminated.
David Goldstein, President, Diamond Ventures	865.42	LU	"The DEIS does not include the ACC Biennial Transmission Assessments, or the Arizona State Land Department 5-Year Disposition Plan as relevant State Plans."	The ACC Biennial Transmission Assessment assesses the adequacy of existing and planned transmission facilities to meet the needs of the state. While construction of transmission facilities affects land use in the state, the assessment itself is not relevant to analysis of impacts of the proposed project on land use, and therefore was not referenced in the EIS.
David Goldstein, President, Diamond Ventures	865.43	LU	"The DEIS would be improved by including relevant policy provisions, tables and maps of the City of Peoria's General Plan."	The City of Peoria's General Plan is referenced in the EIS in Section 3.6.3.3.
David Goldstein, President, Diamond Ventures	865.44	GEN	"The DEIS uses specific terminology consistent with many of the disciplines associated with the resources analyzed. However, the DEIS shows a lack of knowledge of real estate industry standards; different sections of the DEIS use inconsistent and undefined terms when discussing real estate. This limits the ability to assess impacts. Examples of undefined terms include: 'Low to medium density', 'conceptual residential subdivisions' 'very little' commercial development occurs in the Study Area, 'weakened housing market', etc."	Definitions of specific terminology have been added to the document glossary in Section 6.3; however, other terminology effectively communicates a general understanding of the subject matter such that the average reader can understand the meaning.
David Goldstein, President, Diamond Ventures	865.45	LU	"Utilities should include water, sewer, road, communications, natural gas and rail in addition to electricity. Existing utilities which are identified in the ADOT ROW Preservation Study as crossing SR74 should be noted."	Applicable and available information relevant to the impact analysis is either already in Section 3.6 or has been added to relevant portions of Section 4.19, Cumulative Impacts.
David Goldstein, President, Diamond Ventures	865.46	NEPA	"The DEIS does not address Reasonably Foreseeable Actions in Affected Environment or through the majority of Environmental Consequences. Reasonably Foreseeable Actions, specifically the master planned developments in Peoria should be acknowledged early and throughout the DEIS."	Reasonably Foreseeable Actions are addressed in Section 4.19, Cumulative Impacts.
David Goldstein, President, Diamond Ventures	865.47	LU	"The map which reflects existing land uses shows no private land within the entire map."	The maps in the EIS reflect color revisions and/or revised legends to clarify presence of private land.
David Goldstein, President, Diamond Ventures	865.48	LU	"The DEIS does not properly contextualize the scope of impacts to BLM property. It states that impacts to private property would be "proportionately small" while not noting the even more de minimis impacts to total BLM acreage."	Section 4.6.2.1 of the EIS states, "The amount of BLM-managed public lands crossed varies by alternative; however, in all cases the amount would be proportionally small compared to the total amount of BLM-managed public lands in the Study Area."
David Goldstein, President, Diamond Ventures	865.49	PH&S	"Saddleback Heights and other master-planned communities are not identified as Nearby Residential Communities in the Ambient Noise Sources table."	The communities do not yet exist thus this is addressed under cumulative impacts Section 4.19.8.1.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.50	PH&S	"The DEIS conclusion does not recognize the conflicting studies quoted in the DEIS. It does not reconcile the British Medical Journal Study which concluded that children living within 200 meters or 600 feet were at an increased risk of childhood leukemia and that children living within 600 meters, 1,800 feet were statistically more likely to have leukemia than those living farther away from power lines with the NIEHS expert group with concluded that research assessing the health effects of exposure to EMFs emitted from transmission lines was not sufficient to establish a definitive cause and effect relationship."	The EIS provides information on a number of studies that have been conducted with regard to the effects of EMF on public health. The EIS states in Section 4.7.1.2 that, "The method for assessing the effects from EMFs is a comparison of projected EMFs for the project with respect to ICNIRP recommendations…"
David Goldstein, President, Diamond Ventures	865.51	OREC	"The DEIS addresses recreational acreage lost, omits the additional recreational amenities and acreage of proposed trails, parks and natural open space gained within the master-planned communities in Peoria."	Section 4.19.10, cumulative effects to Recreation acknowledges that planned developments would include recreation facilities.
David Goldstein, President, Diamond Ventures	865.52	OREC	"The DEIS omits the golf course amenities within the Saddleback Heights master planned community."	Section 4.19.10, cumulative effects to Recreation, acknowledges that planned developments would include recreation facilities, however does not specifically mention golf facilities.
David Goldstein, President, Diamond Ventures	865.53	OREC	"The DEIS states that the primary recreational use within the Study Area is OHV recreation. The DEIS does not address hiking, boating, camping, organized youth leagues, team sports associated with K-12 and college education, or golf; all recreational activities within the Study Area supported by residents in masterplanned communities."	Section 4.19.10, cumulative effects to Recreation, acknowledges that planned developments would include recreation facilities supporting activities discussed in this comment.
David Goldstein, President, Diamond Ventures	865.54	OREC	"The DEIS does not acknowledge recreational development within master plans as reasonably foreseeable development."	Section 4.19.10, cumulative effects to Recreation, acknowledges that planned developments would include recreation facilities.
David Goldstein, President, Diamond Ventures	865.55	OREC	"The map which indicates recreational land use does not include state or private land recreational uses."	Figure 3.9-1 shows the Recreation Opportunity Spectrum, which is specific to BLM-managed public lands. Figure 3.9-2 shows special designations and Special Recreation Management Areas, also specific to BLM-managed public lands. No known State or Private recreational uses would be directly affected by the Project. Indirect effects, such as visual resources are addressed in Section 4.14.
David Goldstein, President, Diamond Ventures	865.56	SOC	"The DEIS incorrectly states that "No effect on housing in the Study Area expected" for all alternatives and disregards the ongoing development activity impacted by Alternative 2 and Alternative 3."	This statement is taken from Table 2.8-1, which summarizes impacts in Chapter 4. This text refers to Section 4.10.2.1, which indicates that construction workers would have no effect on housing. Table 2.8-1 was updated to make this clarification.
David Goldstein, President, Diamond Ventures	865.57	SOC	"The DEIS incorrectly states that "No houses within 200' of ROW; therefore proximity and price effects do not apply ... land within 200' of the ROW within planned developments could be reduced up to five%"	Section 4.10 has been revised to accurately reflect information on existing houses within 200 feet of the proposed transmission line.
David Goldstein, President, Diamond Ventures	865.58	SOC	"Section 4.10.1.2 appears in conflict with Section 3.10.7.3, as it concludes that identified impacts to property values with structures were inapplicable to vacant, undeveloped and agricultural land, identifying a value impact of zero to 5 percent. The modest value impacts identified are at odds with the negative range of 5 to 36 percent and average negative impact of 20 percent identified in Section 3.10.7.3."	The discrepancy between Sections 3.10.7.3 and 4.10.1.2 have been reconciled, and the analysis in Section 4.10 was updated accordingly.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.59	SOC	"When the DEIS states that new tax revenues for the alternatives would be the same as the proposed action, the DEIS does appropriately acknowledge that the Proposed Alternative has greater potential for private, developed land to contribute application and development fees, connection fees, primary and secondary property taxes and sales taxes that would be associated with the unconstrained development of commercial and residential property on private land within master planned communities. Alternative 2 and Alternative 3 would result in development delays and reductions in assessed valuations. Each year, property taxes paid by land, commercial and residential properties support a variety of essential public health and safety services as well as quality of life components. Some recipients of primary and secondary property taxes include: City of Peoria, Voter-Approved Bonds, Peoria Unified School District, Peoria Unified School District Bonds, Peoria Unified School District Overrides, Community College District, Community College District Bonds, State Equalization Tax, West Mec, General County Fund, Flood Control District of Maricopa County, Central Arizona Water Conservation District, Fire District Assistance, Library District and Maricopa Special Health District"	Section 4.10 provides this analysis.
David Goldstein, President, Diamond Ventures	865.60	SOC	"The DEIS states that Alternative 3 crosses 255.43 acres of private land with an estimated value of $11.0 and that these lands generate $909,151 million in property tax revenue. This number should be corrected."	The word “million” was deleted following the “$909,151”.
David Goldstein, President, Diamond Ventures	865.61	SOC	"The DEIS is inconsistent in stating the area of direct negative impact of the transmission line. In some places, the effect is stated to be 200' from the transmission line. In other places, the effect is stated to be 200' from the ROW. If the transmission line is not located in the middle of the ROW, the DEIS infers that the area of impact could be 600'."	This inconsistency has been corrected document-wide. In addition, the literature review in Appendix 3A was revised to include new empirical studies, and Section 4.10 was revised to clarify that the value of lots adjoining a ROW would be affected.
David Goldstein, President, Diamond Ventures	865.62	SOC	"The DEIS states the process should consider ... the appropriateness of amending the RMP in such a way that would benefit developers ... "This language reflects a negative bias against developers and is inappropriate. Therefore, it should be removed.	Table 1.8-2 provides a summary of issues from Scoping, which includes the Economic Strategies Workshop. The issue referenced by this comment is that the process of amending the RMP should consider whether or not it is appropriate to amend the RMP in such a way that would benefit developers. The referenced text is stating the issue as it was raised during scoping, and is not expressing a negative bias against developers on the part of the BLM.
David Goldstein, President, Diamond Ventures	865.63	SOC	"The DEIS does not address the potential impacts of 1,013 Multi-use Corridor designation on the BLM land south of SR74 to market and non-market values."	Section 4.1.3 indicates that analysis of impacts resulting from future development within a multiuse corridor would be required prior to authorization. Presently, there are no current effects.
David Goldstein, President, Diamond Ventures	865.64	SOC	"The DEIS emphasizes the economic values associated with grazing leases and OHV activity. The high net economic values associated with Off Highway Vehicle Recreation is stated as $68 per OHV trip. The DEIS goes further to state that 20% of the population in Arizona participates in OHV. There is no data provided to substantiate such a large assumption."	Section 4.10.2.1 cites the source of the referenced $68 per trip as (Silberman and Andereck 2006). Section 3.10.8 was revised to include a citation for the 20% figure.
David Goldstein, President, Diamond Ventures	865.65	SOC	"The DEIS acknowledges that Finance, Insurance and Real Estate accounted for more than 30% of the earnings and employment. The economic contributions, earnings and employment associated with commercial and residential development anticipated within Saddleback Heights and other master-planned communities receives less attention that OHV and grazing."	The potential economic drivers of Saddleback Heights and other master planned communities that are not yet developed are more speculative, whereas OHV recreation is occurring and would be affected by the proposed project.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.66	RENE	"The solar and renewable energy sector of the economy and employment and financial contributions to the Arizona economy are not described in the text of the DEIS. Given the importance of renewable energy and the need for renewable energy transmission the DEIS should address this more completely. While the appendix lists some planned solar projects, it does not mention the entirety of planned solar generation projects in central Arizona."	The list of projects in Appendix 4B was intended to be as comprehensive as possible for the identified Cumulative Impact Areas, but was based on the best available information at the time the list was compiled.
David Goldstein, President, Diamond Ventures	865.67	SOC	"The Housing Values stated in the DEIS do not reflect the 2010-2012 trends in Phoenix and do not recognize the North Central/ Peoria Sub-Market where values are higher than average for the overall region."	Home values are not used for any impact analysis in Section 4.10. Changes in the real estate market would not change the impact of the transmission line on home values. Regardless of the present value of any property, the addition of the transmission line would affect the value of the property on a percentage basis, as described in the cited source contained in the literature review in Appendix 3A.
David Goldstein, President, Diamond Ventures	865.68	SOC	"The maximum annual tax income generated from private properties is understated and does not reflect home prices in Peoria or anticipated housing demand within the reasonably foreseeable developments."	Section 4.19.11 was updated to include analysis of cumulative impacts to tax revenue.
David Goldstein, President, Diamond Ventures	865.69	SOC	"In Alternative 2 and Alternative 3, the DEIS does not include or analyze the impacts of a 40-252 re-evaluation of the ACC Decision and potential new Line Siting case."	Sections 4.10.2.2 and 4.10.2.4, Alternative 2, Alternative 3, and the No Action Alternative were revised to include discussion of the need for APS to return to the ACC process, and address potential indirect socioeconomic effects of that action.
David Goldstein, President, Diamond Ventures	865.70	SOC	"It should be noted that in 2010, a public record shows a price paid for vacant ROW land at $234,700 per acre."	Without documentation, this is anecdotal information, and not part of an empirical study, and therefore not listed in Appendix 3A.
David Goldstein, President, Diamond Ventures	865.71	TRANS	"In addition to ADOT's planned expansion of SR74, MAG, Maricopa County, and Peoria have planned local and regional roadways within the vicinity. The DEIS does not identify these planned roadway locations and the changes in traffic volume and dispersal that will occur."	The document was reviewed by MAG and additional data provided by MAG regarding transportation upgrades/expansions were added to the EIS.
David Goldstein, President, Diamond Ventures	865.72	TRANS	"The DEIS addresses upgrades, but does not address the new interchanges to be constructed with the widening of SR74 and the impact new intersections and interchanges will have on commercial development."	Section 4.19.11 includes new commercial development in the analysis of cumulative effects to socioeconomics.
David Goldstein, President, Diamond Ventures	865.73	TRANS	"The description of the BNSF rail line describes with specificity current activity and volume and future projections and potential growth with anticipated volumes as well as the components of the Surprise Logistics Center. The projections and potential growth of Saddleback Heights, Vistancia and Lake Pleasant Heights do not receive similar treatment in the DEIS."	The identified information was inappropriately located in Section 3.12.2.3, and has been moved to cumulative impacts in Section 4.19.
David Goldstein, President, Diamond Ventures	865.74	VIS	"Saddleback Heights presented an analysis of the visual impacts of the transmission line on the south side of SR74 during the ACC Line Siting by Gary Rich, M.S. Engineering."	All applicable and relevant information was used for the analysis presented in the EIS. Simulations for alternatives situated on the south side of SR 74 are provided in Section 4.14, along with a viewshed analysis.
David Goldstein, President, Diamond Ventures	865.75	VIS	"The DEIS acknowledges that micro-siting would assist in minimizing impacts, and that micro-siting has not been completed. Any stated conclusions in the DEIS should also state that micro-siting should further reduce Impacts.	Section 4.14.4 states, “Following the implementation of the mitigation measures, although impacts to visual resources would be reduced in some cases, residual effects would still occur with the transmission line still being present in the area where there was not one previously.”

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.76	VIS	"The DEIS quotes the Kroll and Priestly 1991 study which minimizes the effects of visual and health concerns of transmission lines, without providing the same level of detail in the DEIS text or from more recent studies which reach emphasize significant effects."	The commenter did not provide additional sources for consideration and it was determined that sufficient information and analysis is currently provided.
David Goldstein, President, Diamond Ventures	865.77	SOC	"The DEIS appears to summarize numerous studies and makes a conclusive statement that properties 50 to 200 feet from the transmission line experienced small negative price effects and the properties beyond 200 feet did not experience any negative price effects. It further states this effect may not be as relevant to rural locations, such as the Project Area. The DE IS should not reach a conclusion regarding the geographic range of impacts or the effect of visibility of a transmission line has on land, commercial and residential properties of varying types. The DEIS should acknowledge the site specific nature and the many factors that influence the range and degree of impacts of electric transmission lines on property values."	Section 4.10.1.2 was revised to include a statement indicating that impacts to property values were estimated based on empirical studies available at the time of analysis and actual impacts would be influenced by local conditions.
David Goldstein, President, Diamond Ventures	865.78	VIS	"The DEIS analysis omits future residents of planned developments as sensitive viewers in the KOP analysis. Visual impacts from several of the Key Observation Points should include future residents of developments such as Saddleback Heights, Vistancia and Saddleback Heights as sensitive viewers."	The EIS analyzes impacts to existing conditions under direct and indirect effects. Impacts to visual resources as perceived by future residents are addressed in Section 4.19.15.
David Goldstein, President, Diamond Ventures	865.79	VIS	"The DEIS description of the BLM land south of SR74 which states "the vegetation is similar to the vegetation on BLM land north of SR74, but the terrain is less hilly and more rolling for about 1.5 miles" does not acknowledge the topography and elevation of BLM land adjacent to SR74, or the prominent butte that is mentioned as the most prominent landform along SR74 in the Study Area.	The description of the BLM land south of SR 74 has been revised per the comment.
David Goldstein, President, Diamond Ventures	865.80	SOC	"The DEIS does not propose any mitigation for impacts to socio-economic resources. Mitigation proposed under Alternative 2 and Alternative 3 should be greater than the mitigation associated with the Proposed Action. Mitigation on private developed land should be consistent with the ROW being adjacent to permanently occupied homes and businesses rather than vacant BLM land with intermittent recreationists."	The impacts for socio-economic resources are identified in Section 4.10; however, no mitigation measures for these impacts were identified and none were suggested by the commenter.
David Goldstein, President, Diamond Ventures	865.81	VIS	"The most detailed description of the Saddleback Heights Specific Area Plan occurs in the Visual Resources Focus Area. The DEIS is inconsistent and states that the areas where the structures would be visible would be very similar under the Proposed Action and Alternative 2. It goes on to state that under Alternative 2, when the structures would be on the south side of SR 74, they would appear larger in the landscape than under the Proposed Action. Within and estimated 800' of the transmission line the structures would dominate the views."	Section 4.14.2.4 states that, "…the overall viewshed impacts of Alternative 2 in terms of areas where the transmission line would be visible and number of structures visible in different areas would be very similar to the impacts of the Proposed Action route." This statement does not speak to the relative perception of the stature of the structures under the alternatives or their dominance of the view.
David Goldstein, President, Diamond Ventures	865.82	WLF	"Saddleback Heights presented a biological evaluation of the impacts of the transmission line on the south side of SR 74 during the ACC Line Siting by Eleanor Gladding, M.S. Biology."	All applicable and relevant information was used for the analysis presented in the EIS.
David Goldstein, President, Diamond Ventures	865.83	WLF	"The DEIS states loss of habitat associated with the transmission line, without acknowledging that the BHRMP has conceded a 1-mile designated corridor which may be disturbed for SR74 expansion."	Site specific impacts from development within the transportation corridor would require future analysis prior to authorization. No loss of habitat has occurred through corridor designation in the RMP.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.84	GEN	"Failure to Reflect Comments Made During Scoping: Many of the comments and specific reports provided during the scoping process, are not discussed or included in the DEIS, including comments submitted by: (a) Chuck Gray of ORANGE regarding private property rights; (b) Rob Wanless of SOLON Corps regarding the importance of electric transmission lines to the Arizona solar industry (c) Steve Burg of the City of Peoria concerning the Project's impacts to the Peoria General Plan (d) Charlie Bowles of Southern AZ Home Builders concerning impacts of electric transmission lines on residential real estate communities and (e) Wendell Pickett of Saddleback Heights concerning impacts south of SR74; and (f) Congressman Franks' comments relating to homeland security and Electromagnetic Pulse threats to national security. These comments should be addressed and considered in the FEIS."	All comments provided during the public scoping process were reviewed and all relevant information and comments were addressed as applicable to the analysis for this project. Detailed information regarding scoping is available in the Scoping Report.
David Goldstein, President, Diamond Ventures	865.85	GEN	"Scoplng: The FEIS should clarify what the distinction between what was derived for inclusion in the document from "internal" and "external" scoping."	Section 1.8 was revised to indicate that Internal scoping issues were derived from the BLM and external scoping consisted of public input.
David Goldstein, President, Diamond Ventures	865.86	GEN	"Terminology and Definitions: Text covering the same topic in different sections uses different terminology. Specifically the terms corridor, right-of-way, route, transmission line are used differently. Impacts to properties adjacent are difficult to determine when there is a lack of location specificity and vague terminology."	Definitions of specific terminology have been added to the document glossary in Section 6.3; however, other terminology effectively communicates a general understanding of the subject matter such that the average reader can understand the meaning. Terminology has been revised document-wide to improve consistency and use.
David Goldstein, President, Diamond Ventures	865.87	GEN	"Natural and Built Environment: The grade changes, topography, and different elevations are not incorporated into analysis of impacts or integrated with the existing and reasonably foreseeable development actions."	All information necessary to conduct a thorough and complete analysis was used and included in the EIS.
David Goldstein, President, Diamond Ventures	865.88	GEN	"Incomplete Project History: The DEIS project history is incomplete. As such, the FEIS should discuss BLM's administrative proceedings relating to APS's ROW application and the ACC proceedings relating to the same."	Section 1.1.2 has been revised to expand the summary of the project history.
David Goldstein, President, Diamond Ventures	865.89	GEN	"Coordination not discussed: The DEIS fails to discuss the impact that clearing and grading In section 2.4.2.4 could have on private land, nor does it discuss the need for coordination with private land owners. As such, the FEIS should address these issues."	The impacts of clearing and grading are discussed by resource throughout Chapter 4; however those impacts are not broken out by land ownership. Beyond the environmental impacts of clearing and grading, coordination between APS and private land owners regarding clearing and grading is beyond the scope of analysis in the EIS.
David Goldstein, President, Diamond Ventures	865.90	GEN	"Study Areas: The study areas for each resource are different and no explanation Is given for this. This makes determination of aggregate impacts difficult to reconcile."	Section 3.1.3 explains the rationale for study areas.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
David Goldstein, President, Diamond Ventures	865.91	OPP MUC	"Given the consistency of the Transmission Line with the overall goals of the Agency and the BHRMP, the plan does not need to be amended. If, however, the plan is amended, it should be clarified to reflect the Administration's "highest priority" of promoting renewable energy and designate the SR-74 as a multi-use corridor. That said, it should not be amended as proposed, but should only designate as multi-use and VRM IV those lands necessary to accommodate the Project I Proposed Action and not the entire 1,013 acres of public land managed by the BLM south of SR 74 because of the unknown and potentially negative impacts it would have on neighboring private property, including reasonably foreseeable development."	BLM has determined that the Bradshaw-Harquahala RMP requires amendment to comply with the FLPMA as described in Section 1.3.2.
Jo Ann Crane	866.1	SUP PA	"It is my understanding the Bureau of Land Management is supporting and recommending Alternative 1 , the certificated route, which runs along the north side of SR-74…I support the certificated route."	Statement of preference.
Robert Barclay	867.1	SUP PA	"I support the certificated route"	Statement of preference.
Brent Cain, PE, Deputy State Engineer, Urban Operations, ADOT	868.1	SUP PA	"I would express our support for the BLM Agency Preferred Alternative alignment for the proposed Arizona Public Service (APS) Sun Valley to Morgan 500/230kV Transmission Line."	Statement of preference.
Bob Stump, Chairman; Gary Pierce, Commissioner; Brenda Burns, Commissioner; Bob Burns, Commissioner; Susan Bitter Smith, Commissioner	869.1	SOC	"This transmission line is extremely important as the connection between the Sun Valley and Morgan Substations would be the final segment in completing a continuous 500kV supply from the Palo Verde hub area to the northeast Phoenix metropolitan area, providing much needed reliability."	Statement of opinion. Chapter 1 describes the need for the project.
Bob Stump, Chairman; Gary Pierce, Commissioner; Brenda Burns, Commissioner; Bob Burns, Commissioner; Susan Bitter Smith, Commissioner	869.2	SUP PA	"…we support the Proposed Action route as the Agency Preferred Alternative route of the proposed transmission line."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stallings	870.1	RNA	"Alternative in addition to those analyzed in EIS: The route would be the same as the Proposed Action to the Lone Mountain Road alignment. From the Lone Mountain alignment proceed northerly, staying on ASLD property to approximately 1/2 mile north of the Joy Ranch alignment, then easterly thru 1/2 mile of private land to the 243rd Ave alignment, then northerly to SR74, then along the south side of SR74 9 miles to the 179th Ave alignment, then follow the route of Alternative 3 to the Morgan Substation. This route would have several positive effects: 1. Minimize the diversion of ASLD lands by the ROW; 2. Route would not pass near the Thunder Ridge Airpark; 3. Route would not pass near residences; 4. Route would put the town of Wittmann outside the 2 mile cumulative zone; 5. There would be a substantial reduction of turning structures required for the project; 6. Route would not require amendment to the EIS/RMP."	This suggested alternative was evaluated and incorporated into Section 2.7 and added to Figure 2.7-10.
Howard Rosenthal	873.1	SUP PA	"We are in support of the PROPOSED ALTERNATIVE which is on the north side of State Route 74"	Statement of preference.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.1	LU	"The BLM originally rejected APS's ROW application because a utility corridor had not been established in the ACC-certificated route. When the Interior Board of Land Appeals (IBLA) then remanded the decision back to BLM, it indicated that the decision rationale "required more detail" (pg. 1-3, Section 1.1.2, emphasis added). It is important to note that the IBLA did not say that the decision had to be changed; it only requested more detail as to why it was refused. Based on the information in the DEIS, the BLM's original rejection of the proposed utility corridor should remain."	Statement of preference.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.2	UC	"To clarify the real "purpose and need" for this project, it is important to look again at the Saguaro National Park Land Exchange that occurred in 1997. In that exchange, Tucson Mountain Investors (led by Don Diamond and Chris Monson) acquired 4,322 acres of BLM land south of SR74. The federal government received only 632 acres near Saguaro National Park in return. Appraised at the ridiculously low price of $800 per acre, the BLM land was quickly sold to other developers for windfall profits. This same land south of SR74, including the Carefree Highway alignment, is what is in question today regarding APS's original proposed power line route. To maximize profits even more and to get more of the public's land, developers now want the APS power line moved north of SR74."	This project is for a proposed transmission line and the Purpose and Need, as described in Chapter 1, was deemed appropriate and applicable for this project.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.3	RENE	"As with many projects, it appears that the developers and proponents of moving the line are attempting to "greenwash" and have now included language about it serving to help Arizona Public Service Company (APS) meet the Renewable Energy Standard Requirements. (page 1-9) That is an assertion with no basis in fact and that is not substantiated in the DEIS. Please explain and/or remove this in the final document."	Additional information was added to Section 1.5.2, as applicable.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.4	M&M	" The DEIS includes a number of qualifiers in discussion of mitigation measures. These qualifiers make it difficult to understand what mitigation will actually take place and also seem to provide a significant amount of wiggle room in terms of what and when mitigation is required."	The mitigation measures were reviewed. Where possible they were revised to be more affirmative in Sections 2.9.1 and 4.2.4.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.5	M&M	" “Riparian areas would be avoided and would not be disturbed by construction activities unless absolutely necessary” (pg. 4-186, Section 4.16.2.1, emphasis added). No further information is provided about when it may be absolutely necessary to disturb riparian habitats. Such information is important to include in the DEIS."	Additional information has been added to the EIS in terms of potential impacts to Waters of the US/wetland and riparian areas from the project.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.6	M&M	" “Access roads could be gated to prevent access by unauthorized personnel” (pg. 2-9, Section 2.4.1.3, emphasis added). When would roads not be gated? Would the BLM require gates on access roads on its lands? This information is pertinent in order to understand potential implications of increased public access, use of this area, and creation of new routes."	Section 4.9.3 has been revised to specify locations for gates on BLM-managed public lands.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.7	M&M	" “Where warranted, a qualified biologist would be retained to monitor, and advise the construction contractor during preconstruction activities to minimize or prevent impacts to sensitive species or habitat” (pg. 2-15, Section 2.4.2.4, emphasis added). When would retention of a qualified biologist not be warranted? How and when would this be decided?"	Sections 2.4.2.4 and 4.16.3 have been revised in response to the comment.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.8	NEPA	" The BLM must seek to ensure that the need for new transmission and related facilities on its lands is not eclipsed by irreparable harm to unique and important ecosystems. Related to this, it is also important to confirm that new transmission will fulfill its primary purpose. To this end, BLM has not adequately justified the purpose and need for the proposed APS Transmission Line Project. The DEIS states that BLM is responding to the APS application under Title V of the Federal Land Policy Management Act (FLPMA) for a right-of-way (ROW) grant and that it is “[t]o meet public needs for use authorizations such as ROWs, permits, leases, and easements, while avoiding or minimizing adverse impacts to other resource values and locating the uses in conformance with land-use plans” (Sec. ES.2.1, pg. ES-2)."	The BLM purpose and need presented in Section 1.3 legally supports the development of this EIS.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.9	NEPA	" This project would not meet public needs as it is being pushed by private developers, primarily Diamond Ventures. It also does not avoid or minimize adverse impacts to other resource values or locate the uses in conformance with land use plans."	Section 1.3.2 has been revised to expand information on BLM’s mission and multiuse mandate. The EIS addresses the issue of the proposed project’s non-conformance with the RMP by proposing an RMP amendment to establish a utility corridor, as described in Section 1.3.2. Further, BMPs and mitigation measures are proposed to be implemented that would avoid and/or minimize adverse impacts.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.10	NEPA	" The DEIS goes on to say that “[t]he Preferred Alternative will reasonably accomplish the purpose and need for the federal action, while fulfilling the BLM’s statutory mission and responsibilities, giving consideration to environmental, economic, and technical factors. This action is responsive to public input for avoiding environmental and economic impacts to lands in the project vicinity” (pg. ES-20). This statement is inaccurate as this action is not in the best interests of the public, nor does it respond to input for avoiding environmental impacts. As noted above, this proposal would essentially give away public lands for the benefit of a private developer to the detriment of natural resources and public values. The BLM must reassess this proposal with regards to the agency’s mission and its FLPMA mandate."	Section 2.10 provides the rationale for the Agency Preferred Alternative. Section 1.3.2 has also been revised to expand information on BLM’s mission and multiuse mandate.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.11	NEPA	" The RMP was barely issued before the BLM began looking into amending it in order to permit this project. The agency is instructed to revise land-use plans only when appropriate. In other situations, it is instructed to maintain the RMP. Utility corridors were determined not to be suitable for this area in the RMP. The RMP emphasizes "preserving open space and retaining scenic and visual qualities" (pg. 80 of RMP). The BLM was correct about its original assessment and there is no need for this corridor or the proposed RMP amendment."	Statement of preference.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.12	NEPA	" The BLM has a multiple use mandate pursuant to the FLPMA. This law, however, calls for a qualified requirement to "use and observe the principles of multiple use and sustained yield set forth in this and other applicable law" (section 202(c)). Moreover, Section 202(c) enumerates nine specific requirements, not only the so-called multiple use mandate. The BLM ignores entirely these other requirements of section 202(c), notably subsection 3, which requires that agencies give priority to the designation and protection of areas of critical environmental concern. By singling out one subsection of FLPMA, section 202(c), and characterizing it as a "mandate," the BLM fails to fully and fairly inform the public about FLPMA's role relative to the proposed transmission line."	The area of BLM-managed public lands that would be crossed under the Proposed Action/Preferred Alternative is not designated an Area of Critical Environmental Concern (ACEC). Need for designation of ACECs was analyzed in the process of development of the RMP.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.13	NEPA	" The BLM has failed to adequately explain why the agency selected the Proposed Action as the agency's preferred alternative."	Section 2.10 provides the BLM's rationale for the Agency Preferred Alternative.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.14	LU	" The City of Peoria states that the Carefree alignment does not comply with its comprehensive land use plan and, therefore, the transmission line should be moved to BLM land on the north side of SR74 (pg. 2-40). However, the transmission line does not comply with BLM's RMP, either, so Peoria's argument seems to be largely a wash. The DEIS admits that a main concern of the City is the planned upscale development at Saddleback Heights, Lake Pleasant Heights, and Vistancia."	The Land Use sections of the EIS fully explain and describe the applicable land use plans and compliance with these plans and Section 2.10 provides the BLM's rationale for the Agency Preferred Alternative.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.15	PH&S	" A close look at the Phoenix Metropolitan Street Atlas however shows no development or roads currently exist within two to three miles of the proposed Carefree alignment. Indeed a recent edition of the Atlas does not even go north as far as SR74, calling into question claims of health effects from power lines to residents in the area."	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7. Health effects are not anticipated.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.16	LU	" It is appalling to believe that development could be proposed over such a large geographical area and yet somehow be held exempt from having to make space for infrastructure such as power lines. It is even more stunning when public lands are proposed to be a dumping ground for these projects so that developers can further profit from building on desert land."	Statement of opinion.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.17	LU	" Peoria also contends that golf courses, parks, and trails planned near the Carefree alignment could be negatively affected by a transmission line. This is certainly true, but the land is already private, and more infrastructure and development is not going to affect the potential land status and overall management of private lands as it will on public lands."	Impacts to future recreation development on private lands are addressed in Section 4.19.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.18	AIR	" A portion of the project is in the designated PM10 nonattainment area and by blading undisturbed desert and opening up the area to more off-road vehicle activity by creating a defacto road, there will be a negative impact on air quality related to PM10. There is also a great likelihood that this is just the first way these lands will be fragmented and disturbed, so the cumulative impacts to the air quality could be substantial."	Impacts to air quality, including PM 10 are analyzed in Section 4.2. Cumulative impacts to air quality are analyzed in Section 4.19.3. Mitigation measures added to Section 4.9.3 specify that the centerline access would be designated an administrative road and closed to recreational use, in part to reduce air quality impacts.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.19	GHG/CC	" No real assessment of the impacts to lands in light of climate disruption and at a minimum it should have been considered in the cumulative impacts analysis."	Future climate disruption and its impacts on affected lands are beyond the scope of this project. Impacts have been evaluated based on best available current data.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.20	CUL	" There are nine historic properties known in the area of the proposed transmission line and while the project would attempt to avoid or span these, it would clearly have a negative impact on them as it negatively affects the context.	Impacts to cultural resources are analyzed in Section 4.3.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.21	CUL	" Has the BLM addressed the tribal concerns with prehistoric sites?	Background information on Native American tribes is presented in Section 3.3.7. Native American consultation and coordination was presented in Section 5.5 of the EIS. Consultation is on-going and any mitigation measures to reduce impacts to tribal and cultural resources would be adopted in the ROD.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.22	PH&S	" Moving this line to north of SR74 will have little, if any, positive impact relative to public health and safety. Regardless of which alternative is selected, the DEIS indicates that, “the expected range of Electromagnetic fields is at least two orders of magnitude less than the recommended exposure limit of 2,000 milliGauss.” (pg. ES-12)"	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.23	OREC	" The DEIS does not adequately address the impacts of this proposed transmission line to non-motorized recreation or to those who are potentially seeking quieter recreation. What will the cumulative impact be?"	Section 4.9.2.2 was revised to specifically address impacts to non-motorized recreation. No cumulative impacts to non-motorized recreation were identified.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.24	OHV	" What will prevent access by off-road vehicles? History has shown that projects such as this with its 38 miles of new permanent roads in the ROW will be abused by ORVs and an increase in erosion, dust, noise, and damage to vegetation both within and outside the ROW will result."	The analysis and mitigation in Section 4.9 have been expanded to clarify recreational use of the ROW and specify mitigation required to prohibit unauthorized recreation use.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.25	OHV	" BLM is acknowledging that it can’t keep bikes, etc. off the new center line roads and there will be significant additional impacts."	Additional recreation mitigation measures have been added. Mitigation measures added to Section 4.9 are intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.26	OREC	" The DEIS also indicates “While the centerline access would be closed to recreational use, it would be an attractive area for target shooting and may lead to unauthorized access into the area if techniques used to prevent access are not thorough.” (4-84) This has potential to significantly affect other forms of recreation and should be analyzed"	The mitigation measures in Section 4.9 have been expanded to specify requirements for prohibition of unauthorized uses. Mitigation listed in the revised section provides BLM authority to enforce the recreational use decisions.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.27	VEG	" The Draft indicates "The Proposed Action and all Action Alternatives contain a very similar amount of (estimated) temporary and permanent disturbance." (P 4-129) How is this possible? The proposed action north of 74 would be going through an undisturbed area and therefore would be creating more disturbance and more destruction of vegetation and potential for spreading invasive plant species. Please address this in the final document."	Tables 2.4-4 and 2.4-7 and their associated footnotes detail the calculation assumptions for disturbance under the proposed action.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.28	SSS	" Preconstruction surveys will be conducted to locate any special status plant individuals that lie within the construction zone. (p 4-129-130) The DEIS admits poor success with this. It is unclear, however, how poor the success will be and just how many native special status plants will be killed and how many will survive. They admit poor success rate for this."	The comment accurately reflects the analysis provided in Section 4.13.2.1.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.29	VEG	" The DEIS should make it clear that the area beneath these transmission lines will be denuded, saguaros will be removed or chopped off, and any tree species are likely to be removed. The area under these transmission lines becomes a defacto road with little in the way of native vegetation. That should be acknowledged and evaluated. How would it be mitigated?	APS would follow and implement a Vegetation Management Program, approved by BLM, and minimize impacts to vegetation underneath the transmission line as described in Chapter 2, Chapter 4, and Appendix 2B. Additional information to describe the impacts of clearing and to clarify what vegetation management will be needed for construction and maintenance has been added to these sections of the EIS.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.30	VEG	" The DEIS also indicates "While the centerline access would be closed to recreational use, it would be an attractive area for target shooting and may lead to unauthorized access into the area if techniques used to prevent access are not thorough." (4-84) This has potential to significantly and negatively vegetation as saguaros are frequently a target of recreational shooters."	The mitigation measures in Section 4.9 have been expanded to specify requirements for prohibition of unauthorized uses, including target shooting. Mitigation listed in the revised section provides BLM authority to enforce the recreational use decisions that would also benefit vegetation resources as well.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.31	VIS	" The proposed transmission corridor and power line are within a Class II VRM area. As noted above, the goal is keep any change low, and activities should not attract attention. No matter how this large transmission line is constructed, it will attract attention and detract from the scenic quality of this area. As proposed, the line would cross SR74 twice, making it especially intrusive relative to the scenic character of the area."	The comment generally reflects the analysis in Section 4.14. However, the BLM also proposes to change the VRM class of the area containing the proposed ROW, as described in Section 1.3.2.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.32	VIS	" In addition to the fact that the area north of SR74 is a Class II VRM, it is also designated as a scenic corridor by Maricopa County."	The Maricopa County Zoning Ordinance establishing scenic corridors is referenced in Section 3.14.1. As described in this section, the City of Peoria does not recognize the Scenic Corridor in the referenced area.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.33	LU	" The DEIS gives a brief paragraph on the Maricopa County Zoning Ordinance that established the Highway 74 Scenic Corridor (pg. 3-134). As part of the debate regarding the suitability of building transmission lines north of SR74 centers on the Scenic Corridor, we feel more attention should be given to this matter in the DEIS."	The level of analysis of impacts to the Maricopa County scenic corridor in Section 4.14 is appropriate given the fact that the corridor is not recognized by the City of Peoria, the majority of the area with the higher intensity impacts to visual resources would occur within the City of Peoria boundaries, and the transmission line would not be within the scenic corridor outside the City of Peoria boundaries under any of the Action Alternatives.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.34	WLF	" Overall, the DEIS greatly underestimates potential impacts to biological resources, including wildlife species. In drafting it, the BLM seems to have made numerous assumptions and did not provide adequate information on species presence and affected population sizes, potential impacts, and suitable mitigation efforts. The DEIS is also full of qualifiers that do not allow the public and other reviewers to adequately understand BLM's plans and mitigation intentions. "	Additional information and applicable revisions to the biological resources sections have been made addressing avian collisions with power lines in Section 4.16.2.1, and avoidance of desert tortoise impacts in Section 4.16.2.2. Mitigation revisions are contained in Section 4.16.3.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.35	WLF	" The BLM does admit that "[i]rreversible and irretrievable commitments of wildlife resources would occur through incidental mortality of individuals, or incidental take in the case of special status species" (pg. 4-200, Section 4.17.15) and that "[h]abitat removal would adversely affect the long-term productivity of wildlife habitat for many species, including special status species and migratory birds" (pg. 4-205, Section 4.18.15). However, it then assumes that impacts to these species will be negligible. This assumption is in direct contradiction to the statements above."	An irreversible or irretrievable impact would not necessarily inherently be of higher intensity or significant. The fact that an impact is irreversible or irretrievable does not mean that it cannot also be an overall negligible effect.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.36	WLF	" At least 248 vertebrate species could be affected by this project (pg. 3-178, Section 3.16.3), including at least 19 special status species (pg. 3-181, Section 3.16.4). However, these numbers are mere estimates as they are based only on known occurrence, suitable habitat, and inadequate surveys. The DEIS ignores that other species may also be present and disregards that some species may occasionally utilize habitats that are not qualified as "suitable."2 We understand that it is virtually impossible to have a thorough understanding of what species are present in an area and their associated population sizes. However, the BLM cannot assume that only species known to inhabit an area will be affected. Without acknowledging this fact, potential impacts may be drastically underestimated."	NEPA analysis is not meant to provide encyclopedic data. It is not necessary to address all species of wildlife, species by species. For general wildlife, the analysis is sufficient to provide the context and intensity of the loss of Sonoran Desert habitat; species level analysis is provided for the special status species. The data used was the best available data from reliable sources – as required by NEPA. The EIS provides an extensive list of species that may be impacted. The EIS also provides the context (number of acres impacted) and intensity (permanent vs. temporary). All of the special status species that could occur in the area are listed in the EIS and the impacts are analyzed as if they were present – where suitable habitat occurs for those species.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.37	WLF	" The DEIS does not acknowledge that the sources used to determine presence of a species in the project corridor do not provide a complete representation. For example, we assume that one of the tools used was the Arizona Game and Fish Department's Heritage Data Management System (HDMS). However, the HDMS relies on incidental observations and data from surveys that have been conducted in an area and does not provide a complete representation of species located in that area. Additionally, many observations and survey results are not reported and, therefore, are not included in the HDMS."	Sources of data used to determine presence of species in the Project Area are specified in Section 3.16.2, 3.16.3, and citations throughout Section 3.16. The Arizona Game and Fish Department information was reviewed and used for the baseline data presented in the EIS.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.38	WLF	" The DEIS notes that field reconnaissance occurred during November 2007, May 2008, and October 2011. No further information is provided about methods, who conducted the surveys, timing within these months, specific locations, etc. This information should have been provided in the DEIS."	Section 3.16.2 was revised to include more details regarding field reconnaissance.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.39	WLF	" Because some species may only be present or active during certain times of the day or year or may not be observed in a given year, it is important to conduct surveys at different times of the day, in various seasons, and repeatedly through multiple years. For example, bats, most species of owls, and many small mammals are primarily nocturnal; many bird species are most active during early morning hours; and some species are crepuscular and are most active during dawn and dusk. Similarly, many migrating bird species are only present during certain times of the year, whereas others may not utilize this habitat every year. By only conducting surveys during three months (for an unknown duration within those months and at unknown timings), likely only a small portion of wildlife species present in the Study Area were observed."	Section 3.16.2 was revised to include more details regarding field reconnaissance conducted. Field surveys of species as suggested by the comment are not warranted. All of the special status species in the area were addressed, where appropriate habitat exists, as if they were present. The EIS considers the area occupied by the candidate (tortoise) species which would receive clearance surveys prior to construction and mitigation post construction. The EIS also states that clearance surveys for migratory birds/nests and mitigation would take place as appropriate.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.40	WLF	" Similarly, different methods need to be used to identify various species. For example, bats are best identified through mist-net and acoustic surveys, whereas small mammal surveys typically include trap surveys. The only indication of methods provided in the DEIS is that "plant and wildlife species observed were noted throughout the course of the field reconnaissance" (pg. 3-177, Section 3.16.2). What survey methods were used? Were various species and classes targeted, or did the surveys only involve incidental observations? Again, without conducting targeted surveys, the vast majority of species present in the Study Area likely were not identified."	Section 3.16.2 was revised to include more details regarding field reconnaissance survey work. Surveys involved only incidental observations of wildlife and associated sign.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.41	M&M	" The DEIS states that "all ground clearing/disturbance activities that could affect sensitive species or habitat would be monitored" (pg. 2-15, Section 2.4.2.4). Who would conduct the monitoring and what training/qualifications would this person or people have? Would the monitor(s) be on-site during all construction activities at all times?"	Section 2.4.2.4 was revised to specify that monitoring for desert tortoise presence and migratory bird active nests would be conducted. Any potential tortoise shelter sites in harm's way would be cleared for tortoises and then rendered unusable (filled in, blocked off with rocks, etc…). A 'qualified biologist' would meet the qualifications for the 0486 series wildlife biologist as posted on usajobs.gov and be approved by the BLM biologist. This project would also included a BLM 3rd Party contracted and approved biological and construction compliance monitor for BLM lands.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.42	M&M	" A qualified biologist may be retained to monitor and advise the construction contractor during preconstruction activities, where warranted. Again, we question when a biologist would not be warranted. We also question why the biologist would not be on-site during construction, as well as during pre-construction activities. The potential for direct mortality of species is significantly higher when work is being performed in an area; it would make sense to have a qualified biologist on-site during these activities, as well."	Applicable clarification has been added to the biological resources mitigation measures.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.43	M&M	" Who will conduct the mandatory Environmental Awareness Program for personnel working on site? What training/qualifications will that person or people have? Will the person(s) have appropriate knowledge of all the resources that may be encountered? What mitigation efforts will be included as part of this program, and will any enforcement of these efforts occur?"	APS's environmental contractor and/or BLM's 3rd party compliance inspection contractor, approved by the BLM, would provide this training. All training would be conducted by experienced and qualified biologists approved by the BLM. The training, at a minimum, would cover identification of tortoises, how to move them according to AGFD guidelines, the protocols for waiting for clearances prior to construction (communication), and when/if a monitor needs to be present. Migratory birds and active nests would be covered with a briefing on the criminal penalties of take under the Act. This information has been added to the EIS in Section 4.16.3.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.44	M&M	" The DEIS notes that gates will be installed on permanent ROW access roads as required by the landowner. Again, we ask whether BLM will require gates on all roads associated with this project that are not already open to the public. In order to limit resource damage, we strongly encourage the BLM to make these roads inaccessible to the public. Also, the DEIS says that gates "would prevent unnecessary traffic along access roads that would disrupt wildlife behavior or cause direct impacts (collisions) to wildlife" (pg. 2-88, Section 2.9.15). It is important to note that gates do not necessarily prevent access (see Impacts of Roads section of our comments)."	Section 4.9.3 has been revised to specify locations for gates on BLM-managed public lands. Mitigation measures have been added to Section 4.9 designating the centerline access as an Administrative route that is intended to prohibit unauthorized use of the ROW, and provide BLM authority to enforce the recreational use decisions. Additionally, Section 4.9.3 specifies that the centerline access would be signed and speed limits enforced during construction, which would reduce adverse impacts to wildlife.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.45	M&M	" Would any mitigation measures be enforced if emergency maintenance activities are required? The DEIS states that it may not be feasible to schedule these with sensitivity to wildlife resources (pg. 4-190, Section 4.16.2.1) and that all adverse impacts would be unavoidable (pg. 4-196, Section 4.16.4). However, it does not discuss whether any mitigation efforts, such as enforced speed limits, would still be in place. What "reasonable measures to protect wildlife" will be taken?"	The referenced text occurs under the heading of Noise and Vibration and speaks to the inability to schedule unforeseen maintenance activities. All mitigation measures would be enforced unless there was something specific due to the nature of the emergency that prevents it.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.46	M&M	" Several important mitigation measures are also absent from the DEIS. For example, in order to minimize trapping or burying of wildlife, will any holes or pits be covered when not in use and checked for animals prior to use? The DEIS must discuss additional mitigation."	Sections 2.4.2.4 and 4.16.3 have been revised to include the recommended additional mitigation.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.47	WLF	" The DEIS says that pre-construction surveys will be done for biological resources to identify areas to avoid during construction. However, little further information is provided. Who will conduct these surveys? It is important for a biologist who is familiar with various species to conduct the surveys to ensure that all species/individuals that occupy the area are identified; it may, in fact, require multiple biologists as many species are very specialized and can be difficult to locate without proper training."	Sections 2.4.2.4 and 4.16.3 have been revised to specify that surveys would be conducted by a qualified biologist, approved by the BLM.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.48	GEN	" When will the surveys be conducted with regards to the start of construction? Ideally, surveys should be done when the specific route is being determined and again immediately prior to work being conducted in that area. Surveys conducted in advance of specific route designation will help minimize risk to special status species and other sensitive resources as those resources can be avoided. However, considering the mobility of wildlife, surveys must also be done immediately prior to work in an area (i.e., on the same day) to help ensure that animals are not in the path of construction. If a species is found within the work path, it should either be moved or avoided, as appropriate, or work should cease until the animal has moved on or other appropriate action has been taken."	Sections 2.4.2.4 and 4.16.3 have been revised to specify that preconstruction surveys would be done along the construction footprint in the layout/project planning phase and then again immediately prior (within a few days) to construction.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.49	GEN	" We request that the BLM provide more detailed information about proposed pre-construction surveys."	Sections 2.4.2.4 and 4.16.3 have been revised to specify that preconstruction surveys would be done along the construction footprint in the layout/project planning phase and then again immediately prior (within a few days) to construction. Preconstruction surveys would be done for desert tortoise and potential shelter sites, active migratory bird nests, and Hohokam agave (*Agave murpheyi*), as well as other incidental observations of wildlife and an inventory of the dominant vegetation present.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.50	WLF	" The DEIS greatly downplays the significance of habitat fragmentation and the effect this project could have on the connectivity of the landscape. A large amount of habitat would be destroyed or degraded as a result of the Proposed Action and action alternatives. These effects would be longterm and significant. However, the DEIS glosses over this fact and does not adequately discuss impacts to the various species in the project area.	Habitat fragmentation is appropriately addressed in Section 4.16.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.51	WLF	" With regards to habitat loss, the BLM frequently notes that wildlife will be able to utilize adjacent habitat, so this project would not have serious impacts. However, the BLM also notes that “adjacent habitat may be less suitable because it may already be occupied or defended, and resources may already be at a carrying capacity to maintain a particular species’ population” (pg. 4-186, Section 4.16.2.1). We appreciate recognition of this fact but are confused as why the BLM then assumes minor or no impacts to a species from this project as animals can move to adjacent habitat. The BLM should reassess potential impacts based on the potential for less suitable or unavailable surrounding habitat."	The EIS quantifies the impacts to habitat in acres by land ownership and intensity (permanent or temporary) (Tables 2.4-4 and 2.4-7). The expected impacts to special status species that may occur in the area are listed in Table 4.16-2. For most of these species where habitat losses will occur the impacts are expected to be minor, defined as: “There would be a small, but detectable effect to habitat amount/quality or to individuals of a species that would be noticeable primarily on the scale of individuals in a localized area. There would be no effect on the viability of the local population or habitat capability”. Given the narrow footprint of the project relative to the surrounding habitat, this would be a reasonable expectation of the magnitude of the impact.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.52	WLF	" This proposal will disrupt a considerable amount of land. As the BLM notes, removal of habitat under any action alternative would result in a permanent removal of habitat due to the slow-growing nature of Sonoran desert vegetation (pg. 4-186, Section 4.16.2.1). Not only will the habitat along the centerline of the transmission line be destroyed, but construction will affect a larger area and impacts will spread into the surrounding landscape. The BLM does not adequately address how this fragmentation and habitat removal will affect biological resources and instead assumes that any impacts would be minor."	Habitat fragmentation is appropriately addressed in Section 4.16 and the level of impacts are described.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.53	WLF	" The BLM does not acknowledge the importance of maintaining large tracts of unfragmented habitat. These large, connected landscapes are becoming increasingly rare and also increasingly important as development and other pressures destroy or degrade desert areas. Many species rely on large expanses of natural habitat for survival. In fact, according to prominent conservation biologists, habitat fragmentation is the most serious threat to biological diversity and is the primary cause of the present extinction crisis." Preserving small or disconnected plots of land will do little to ensure survival of some species and ecosystems. The BLM must consider this implication and analyze potential impacts to species that currently or may in the future utilize this area.	Habitat fragmentation is addressed in the EIS in Section 4.16.2.1 under the heading of Habitat Fragmentation.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.54	GHG/ CC	" These large, connected landscapes are also becoming increasingly important in the face of climate change. As habitats are modified due to changes in temperature and weather patterns, species need the ability to move and the ability to access resources within a broader area. Researchers have found that climate change alters ecosystem quality, potentially making it more difficult for species to access necessary resources solely within previously occupied areas. Similarly, increasing temperatures are causing habitat ranges of many North American species to shift northward in latitude and upward in elevation. Habitat fragmentation and the inability of animals to shift their range in response to climate change is a chief concern. In the DEIS, the BLM notes that "[c]urrent conditions in the Sonoran Desert represent the extreme range for many plant species, and the combination of increasing temperatures and decreasing water availability is likely to shift the range of many plants and animals northward or even cause them to become extinct" (pg. 3-16, Section 3.2.5.6). However, even though recognizing these threats, the BLM does not discuss climate change or the implications for wildlife species based on lost and fragmented habitat. In fact, Section 3.2.5 is the only section of the DEIS in which climate change is actually mentioned and, even then, only general information is provided rather than information specific to this project. This is a serious oversight."	Section 4.2.3.2 provides quantifications of the Greenhouse Gas (GHG) emissions for the project. GHG emissions from the project are significantly below reporting or permitting thresholds that apply to stationary sources. Since there is no established method to assess the impacts of GHG emissions, a meaningful assessment of the climate change impacts of the project cannot be determined. Section 4.19.17 describes potential cumulative effects to wildlife resources that address some of these comments.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.55	WLF	" The BLM also does not address the fact that some species prefer not to cross open areas without suitable habitat cover. The DEIS does note that "[p]opulations of small mammals or reptiles could be fragmented by the transmission line if a portion of the population becomes isolated by or avoids the disturbance area" (pg. 4-191, Section 4.16.2.1). However, it then states that these impacts would be short-term and minor. How was this conclusion reached? Fragmentation of a population is neither a short-term nor minor effect. As noted above, habitat fragmentation is one of the primary threats facing many species; the inability or unwillingness of a species to cross an open area must factor in to BLM's analysis.	Habitat fragmentation is appropriately addressed in Section 4.16 and the level of impacts are described.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.56	WLF	"The DEIS also recognizes that transmission lines pose a barrier for migratory bird flights, despite raptor protection features, and creates smaller areas of suitable habitat, resulting in long-term and moderate impacts. Considering the number of migratory bird species that utilize this area, including several special status species, such an impact can be quite significant. Similarly, disturbance of desert wash habitats can fragment important habitat for a variety of species as well as critical wildlife linkages. Unfortunately, no mitigation can resolve these concerns. The BLM should reassess potential impacts based on these threats."	BMPs (Appendix 2A) and mitigation measures (Section 2.9 and throughout Chapter 4) would be implemented for the project that would help to avoid and/or minimize potential impacts. Section 4.16 describes habitat fragmentation impacts.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.57	WLF	"With regards to habitat loss and fragmentation, we request that the BLM provide a more detailed analysis of potential impacts from this project. The DEIS does not adequately represent or discuss some important implications of lost, degraded, and fragmented habitat, such as those relative to climate change and lost movement abilities, which does not allow the true impacts of this project to be evaluated."	Habitat fragmentation and its impacts to wildlife species are discussed in Section 4.16.2.1. The EIS acknowledges impacts from fragmentation and impediments to movement for some species. Since there is no established method to assess the impacts of GHG emissions, a meaningful assessment of the climate change impacts of the project cannot be determined. Section 4.19.17 describes potential cumulative effects to wildlife resources that address some of these comments.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.58	SSS	"The Preferred Alternative and several of the action alternatives have the potential to greatly affect desert tortoises. The Proposed Action would destroy or degrade 135 acres of Category II habitat and 192 acres of Category III. Considering that the Sonoran desert tortoise is a candidate for listing under the Endangered Species Act and that studies have shown that habitat fragmentation and development are chief threats, this is unacceptable. As the DEIS indicates, Category II habitat may be crucial for survival of the species as it is essential to maintenance of viable populations. Destruction and degradation of this habitat thus endangers the viability of that population of tortoises, further threatening the species. The BLM must be cognizant of this fact and work to preserve habitat areas such as this. Unfortunately, the mitigation measures discussed in the DEIS will do little to help protect this species."	As explained in Section 4.16.3.1, loss of Sonoran desert tortoise habitat would be compensated according to the BLM desert tortoise mitigation policy. The intent of the mitigation policy is to maintain habitat in order to ensure the existence of viable populations.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.59	SSS	"In addition to habitat fragmentation, this project also has the potential to further exacerbate other threats to this species, including disease, exotic plant species and the associated fires, illegal collection, predation, and the effects of increased recreation access and off-road vehicles, among other issues. These impacts have the potential to cause direct mortality and a reduction in the effective population size, as well as further alter habitat.14 However, the DEIS does not discuss associated impacts with regards to this species."	Section 4.16 analyzes the potential impacts to the desert tortoise from the project and Section 4.19.17 provides a description of potential cumulative effects to wildlife resources.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.60	SSS	"In the DEIS, the BLM seems to rely primarily on compensation for loss of desert tortoise habitat. This is not an appropriate mitigation measure. First and foremost, purchasing suitable desert tortoise habitat for the purposes of conservation does not create habitat, as the DEIS implies, as that habitat already exists. Because purchasing land does not create habitat, the statement that this project will result in “no net loss” of tortoise habitat is completely inaccurate. This project will eliminate and degrade existing habitat, which will result in a net loss."	The following text was added to Section 4.16.3.1: The first focus of the desert tortoise mitigation policy is on avoiding and minimizing impacts to tortoises and their habitat. If an action with on-site mitigation measures would result in residual impacts, then compensation would be required. Category II habitats would be compensated for at a rate ranging from 2:1 to 5:1. Category III habitats would be compensated for at a rate of 1:1. Acquiring habitat is the primary means of compensation for impacts to tortoise habitat; however, compensation funds can also be used for other tortoise conservation efforts. Purchasing private lands with tortoise habitat would bring these lands into federal protection, making the habitat more secure. Further, reclamation of temporarily disturbed areas would also be conducted and would assist with restoring impacted habitat.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.61	SSS	" Second, purchasing small tracts of land across the state will not necessarily help protect survival of this species. Small, disconnected fragments of land do not compare to large blocks of intact habitat. In order to ensure self-sustaining populations of tortoises, large, connected landscapes must be kept intact. As noted above, large blocks of intact landscapes are becoming increasingly rare and increasingly important. Similarly, there is no guarantee that purchased habitat will be of the same quality as the lands that are destroyed, especially considering size and fragmentation effects. Third, purchasing land for the purposes of conservation does not ensure that those lands will not be developed, fragmented, or otherwise degraded in the future. As is evident by this proposed project and the proposed RMPA, lands set aside for conservation are not immune to development."	The BLM's tortoise compensation policy directs that the BLM purchase habitat of equal or higher value for tortoises. Connectivity to adjacent tortoise habitat is an important decision when determining the value of the habitat. The purchased land would be in federal protection and any proposed ground-disturbing impacts would have to be analyzed through NEPA, and would be open to public input.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.62	SSS	" Finally, compensation for removal of tortoise habitat instead of purchasing lands for conservation also does not create habitat. If compensation is required, habitat will be lost, even according to BLM's standards. The statement that "[t]here would be no net loss of desert tortoise habitat" (pg. 4-193, Section 4.16.2.2) is false and should not be used to justify this project."	Through compensation there would be no net loss of desert tortoise habitat on public lands. The compensation rate for category II habitat would be from 2:1 to 5:1.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.63	M&M	" Another mitigation measure offered specific to desert tortoises is for a desert tortoise monitor to survey the ROW prior to ground-clearing construction activities (pg. 2-88, Section 2.19.15). What training or experience would this monitor have? Tortoises can be very difficult to locate, depending on terrain and vegetation, so it is important for a person with suitable experience to conduct the surveys. Also, when would the surveys be conducted relative to the start of construction? It is important to survey the area just prior to and during construction as tortoises are highly mobile."	Sections 2.4.2.4 and 4.16.3 have been revised to specify that surveys would be conducted by a qualified and BLM approved biologist. A 'qualified biologist' would meet the qualifications for the 0486 series wildlife biologist as posted on usajobs.gov and have the necessary experience and expertise required by the BLM. These sections have also been revised to specify that preconstruction surveys would be done along the construction footprint in the layout/project planning phase and then again immediately prior (within a few days) to construction.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.64	M&M	" The DEIS also says that desert tortoise training would be included in the Environmental Awareness Program. Who would develop this portion of the program? Would there be any enforcement of recommended procedures to reduce tortoise mortality?"	APS's environmental contractor and/or BLM's 3rd party compliance inspection contractor, approved by the BLM, would provide this training. All training would be conducted by experienced and qualified biologists approved by the BLM. The training, at a minimum, would cover identification of tortoises, how to move them according to AGFD guidelines, the protocols for waiting for clearances prior to construction (communication), and when/if a monitor needs to be present. BLM would have in place any applicable and relevant enforcement procedures, typical for similar construction projects on BLM land.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.65	SSS	" Speed limits and signs will be posted on all access roads in desert tortoise habitat. However, as noted in the Impacts to Roads section of our comments, these may do little to reduce tortoise mortality from collisions with vehicles. Personnel and any members of the public who access these roads may not follow the posted speed limit. Additionally, tortoises are very cryptic and blend in well with their surroundings; they may be difficult to see on the roadway, especially at higher speeds."	The EIS was revised to indicate that the centerline access would be designated an administrative route, and as such, speed limits would be enforced by the BLM. Environmental training for construction workers would also increase awareness and reduce the risk of mortality.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.66	SSS	" The BLM does not adequately address potential impacts to the Sonoran desert tortoise, yet assumes that impacts will be negligible. Based on the information provided in the DEIS as well as the information discussed above and in the Cumulative Impacts portion of this section of our comments, impacts to this species could be significant, especially in the long term. The BLM should reassess potential impacts to tortoises."	The EIS states that impacts to desert tortoise would be long-term and minor. Minor is defined as: "There would be a small, but detectable effect to habitat amount/quality or to individuals of a species that would be noticeable primarily on the scale of individuals in a localized area. There would be no effect on the viability of the local population or habitat capability."

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.67	WLF	" The BLM assumes that amphibians will either not be impacted or will experience only minor impacts from this project due to the lack of surface water in the Study Area. However, amphibians can exist in areas without semi-permanent surface water for prolonged periods. Many estivate during dry periods and become active only when surface water is available. Additionally, these species typically estivate underground, making them especially vulnerable to ground disturbance.15 Because amphibians rely on both terrestrial and aquatic areas, they are especially vulnerable to habitat fragmentation and disturbances within their range. However, the DEIS does not mention any impacts of this project on amphibians due to the above assumption. The DEIS greatly underestimates potential impacts to amphibians. These impacts should be reassessed."	Additional potential impacts to amphibians have been added to the Mortality and Fragmentation sections of 4.16. Impacts to amphibians from desert wash habitat disturbance are described as potentially moderate.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.68	WLF	" The DEIS says that a wildlife biologist observed bird fauna along the Agua Fria River from an outlying access road in May 2008 (pg. 3-180, Section 3.16.3). However, this survey does not provide an adequate or reliable account of species that utilize this area. First, a single survey or surveys conducted only in one month of one year do not accurately represent species presence in an area, as discussed above. Second, the survey was conducted from an outlying road, from where several species may not have been seen or heard. Third, numerous other species were likely occupying this area but were not seen or heard at that specific time. The BLM must recognize that surveys such as this do not provide an adequate representation of species in an area and should not base decisions on them."	More details regarding reconnaissance field surveys have been added to Section 3.16. Further, impacts to special status bird species that possibly occur in and near the project site were assessed in the EIS (Table 4.16-2). Mitigation to reduce impacts to these and other bird species include surveys for active nests so that the nests could be avoided during construction activities or by scheduling construction outside of the nesting period.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.69	WLF	" The BLM admits that “[o]ccurrence, use, and movement of golden eagles in the Study Area are not well understood” (pg. 3-189, Section 3.16.4.4). Without this knowledge, how can potential impacts to this species be ascertained? The BLM cannot ignore potential impacts just because the baseline data is not available. We would also like to remind the BLM that use of the HDMS does not provide definitive data (see comments above), so it cannot be assumed that golden eagles do not use this area."	The EIS acknowledges that there may be long-term minor impacts to golden eagle foraging habitat. Potential suitable nesting habitat was modeled and there was no suitable nesting substrate for golden eagles within one mile of the project right of way.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.70	WLF	" Potential impacts to these species from loss of habitat are also not provided adequate attention. For example, disturbance of desert washes and loss of riparian habitat would have significant negative effects on species such as the crissal thrasher and Lucy’s warbler; the DEIS acknowledges this. However, it assumes that no such impacts would occur because desert washes containing seasonal flows or riparian vegetation would be avoided if possible (pg. 4-186, Section 4.16.2.1). No indication is given when it would not be possible to avoid such areas."	The project right of way crosses many washes. In some areas it may not be possible to access the construction site and construct the power line and facilities without impacting wash habitat. If destruction of desert wash habitat occurs, the EIS states that it would be a long-term moderate impact to crissal thrasher and Lucy’s warbler habitat. Further, additional information on potential impacts to ephemeral washes were added to the EIS in the Water Resources section.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.71	M&M	" If nests are found during pre-construction surveys, the DEIS states that “a timing or special buffer may be implemented. The relatively short duration of construction activities would be considered before implementing the recommended buffer” (pg. 4-195, Section 4.16.3, emphasis added.) When would a buffer not be implemented? Who would make this decision? Mitigation measures such as this should be mandatory in order to be effective."	A buffer would not need to be implemented if the nest was not active. This decision to buffer or put timing restrictions on an area would be made on a case by case basis. The decision maker would be the Field Manager with advice from the BLM Wildlife Biologist.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.72	WLF	" The DEIS also makes assumptions as to possible effects. For example, it states that "[s]ome nests may be within a larger radius where noise and vibration impacts may still be present, but would not cause adverse reproductive effects" (pg. 4-187, Section 4.16.2.1). Why is it assumed that no adverse reproductive effects would occur? No reference is provided. Is this merely an assumption or is it based on scientific knowledge?"	The EIS is acknowledging that there exists an area where there are noise and vibration impact to birds, but the disturbance isn't great enough to harm reproductive success due to the attenuation of noise over distance. The EIS also acknowledges that there is an area closer to the disturbance where there would be an adverse effect on nesting success. Those nests within the construction zone are considered close enough to the disturbance that reproductive success may be compromised, so they would be buffered by avoiding the area where nesting is taking place or postponing construction until the nesting season is over.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.73	WLF	" The DEIS admits that "[m]ortality would occur when individuals are buried or run over by equipment; many small mammals and reptiles utilize small burrows underground, so these impacts are particularly likely if individuals stay underground within the direct disturbance area instead of moving to adjacent habitat" (pg. 4-185, Section 4.16.2.1). Most burrowing animals utilize their burrows for protection when threatened, so they likely would not have the opportunity to move out of the way of construction activities. What mitigation measures are proposed to reduce impacts to these species?"	The EIS acknowledges the likelihood of the mortality of these burrowing species where road building and other excavation takes place. There is mitigation for the burrowing special status species, Sonoran desert tortoise, but there are no mitigation measures for other burrowing reptiles or mammals.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.74	WLF	" The DEIS states that "the number of bat species in the Study Area predictably would be highest along the Agua Fria River within riparian habitat" (pg. 3-180). However, it then notes that 12–17 species of bats could utilize the riparian habitat along the Agua Fria, whereas 17–21 species could use other areas (Section 3.16.3). How were these numbers derived? Why is a lower number of bat species listed for riparian habitat compared to other areas? Although bats may forage or roost in certain areas, most species still seek riparian areas and free-standing water."	The EIS mentions that between 17 and 21 species of bats could forage in the creosote-white bursage and the Sonoran palo verde mixed-cactus desert scrub habitats. This information was derived from Hoffmeister (1986) which is included in the references section of the EIS. The EIS also states that 12 to17 species of bats could frequent riparian habitat along the Agua Fria River, although it is likely that all of the bat species utilizing the upland habitats could also frequent the riparian habitat as well; this information came from the Biological baseline report.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.75	WLF	" The DEIS also assumes that no impacts will occur to Western red bats and Western yellow bats because the project will not result in loss of aquatic or riparian habitat (Table 4.16-2). However, both species of bats are not riparian obligates and may utilize other areas of the project site for both roosting and foraging.19,20 The Western red bat may use other areas, including mesquite bosques and desert washes;21 the DEIS indicates that the action alternatives and the Primary Segment Common to All Action Alternatives would cross such areas. The DEIS also notes that riparian habitats and desert washes will be avoided only when possible, which implies that important habitat for these species may be destroyed or degraded. The BLM must address potential impacts to these species."	Riparian habitats would be avoided; language regarding disturbance in these habitats was revised accordingly. Desert wash habitats (Waters of the US) may be disturbed, however, and Table 4.16-2 and associated text were revised to address potential impacts to special status bat species.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.76	WLF	" The cumulative impacts analysis with regards to biological resources is deficient and does not provide an adequate representation of possible effects. Rather than provide analysis for each species and area affected, it generalizes all effects. Some species may be more heavily affected by projects and actions occurring in the region of the project, but this analysis does not give any indication of that. We realize how difficult it would be to assess cumulative impacts for each of these species and the affected habitat, but the BLM must acknowledge that the information provided in its cumulative impacts analysis is of little use to fully understanding the effects to these resources."	Section 4.19.17 was revised to include discussion of disturbance associated with the Project and indicates that the Project would make a relatively minor contribution to the cumulative impacts. Analyzing cumulative impacts to wildlife by species would require greater site-specific analysis keyed to individual species habitat, which would result in an overly cumbersome analysis for such a large cumulative effects area, when the Project's contribution is relatively minor.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.77	CE	" We also question why only a two-mile buffer was used to analyze cumulative impacts to wildlife. Many of the species inhabiting this area have a range much wider than just two miles. Combined with actions occurring in other areas of their range outside of that two-mile buffer, this project could have significant impacts. We question why the BLM assumes that "a two-mile buffer should encompass potential indirect impacts" (Table 4.19-1, emphasis added) and encourage the agency to broaden its analysis to include activities occurring in other parts of the species' ranges."	Table 4.19-1 states, "For some of these resources, the CIA boundary was chosen for simplicity purposes…" Expansion of the CIA for wildlife would likely dilute effects. Indirect impacts for the majority of wildlife species using the area directly impacted by the project wouldn't extend beyond the two-mile buffer. Expanding the CIA for wildlife such as bird species that could travel much greater distances would dilute the potential cumulative effects resulting from the proposed project. Further, additional analysis in Section 4.19.17 has been included in the FEIS.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.78	CE	" This project, when combined with all other projects and actions occurring or potentially occurring in the area, results in significant habitat loss, degradation, and fragmentation. Cumulatively, these actions may result in impacts to species at the population or species level. However, the DEIS does not address these impacts."	The cumulative impact analysis in Section 4.19.17 recognizes the potential cumulative population level impacts. It states, "Overall cumulative effects to wildlife resources…would be minor to moderate" and, "The effects described above are often amplified for special status wildlife." Therefore, impacts to special status species, if amplified, could rise to the level of significance.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.79	CE	" In light of past, present, and reasonably foreseeable actions, it is critical to preserve habitat, including the area this project would affect. See the Habitat Loss and Fragmentation/Wildlife Linkages section of our comments for further information on this. The habitat currently available in the project area will become increasingly important as development occurs, including the planned community development south of SR74, which would decimate 82,403 acres. The BLM has a responsibility to maintain intact landscapes and habitat. By allowing this project to occur on its lands, that mandate will not be met."	Section 1.3.2 was revised to expand the discussion of BLM's mission and multiple use mandates. The revised section now states, "BLM's multiple-use mission, set forth in the FLPMA, mandates that the BLM manage public land resources for a variety of uses…" While the commenter is correct that BLM has a responsibility to maintain intact landscapes and habitat, the BLM's mandate clearly indicates that the BLM has a responsibility to balance a variety of uses.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.80	CE	" The DEIS does not adequately address impacts of increased recreation, potential spread of nonnative plant species, and other landscape-altering activities that will most assuredly continue to increase in this area. Such impacts are only briefly mentioned in the DEIS. These activities already have a negative impact on biological resources, and this project as well as foreseeable future actions will certainly exacerbate those impacts."	Section 4.19.17 states, "Increased population in the CIA would likely increase recreational pressure on surrounding public lands. Increased human activity, hunting, and potential increased poaching would all lead to impacts to wildlife."
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.81	CE	" When determining cumulative and potential long-term effects, the BLM must also account for changing habitat and range of species. Many species naturally alter their range or disperse to new areas. In addition, as climate change, drought, human development, and other factors alter habitat availability, quality, and range, species occurrence, range, and movement will shift. Most of the impact assessments in the DEIS only account for the current range or known locations of the affected species. This is an inadequate assessment."	The EIS analyzes impacts to suitable habitat for a number of species. Impacts to suitable habitat are detailed in Table 4.16-2.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.82	GHG/CC	" Related to this, the BLM does not provide any consideration to other stressors, such as climate change and drought. As the U.S. Forest Service discusses in detail, "the issues of global climate change and cumulative impacts are closely related." Such stressors are reasonably foreseeable and may have very significant impacts on the resources discussed in the DEIS. Although changes to the ecosystem and the implications for the resources these areas support are not well understood, it is imperative for land management agencies to incorporate climate change in planning decisions. By excluding factors such as climate change from the cumulative impacts analysis, the BLM has significantly underestimated the potential impacts of this project."	Section 4.2.3.2 provides quantifications of the Greenhouse Gas (GHG) emissions for the project. There is no established method to assess the impacts of GHG emissions from the project, which are significantly below reporting or permitting thresholds that apply to stationary sources. As a result, no meaningful assessment of the climate change impacts of the project can be determined. Section 4.19.17 describes potential cumulative effects to wildlife resources that address some of these comments.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.83	CE	" The BLM's assertion that cumulative effects to wildlife resources would be "minor or moderate" is unfounded and likely inaccurate. Even within its narrow scope of a two-mile buffer, the cumulative impacts should be considered major. Within this two-mile buffer, past, present, and reasonably foreseeable actions included in the DEIS would affect 93.6 percent of the cumulative impacts area. That degree of disturbance is significant. If the BLM were to appropriately analyze all cumulative impacts to wildlife resources, as discussed above, these impacts become even more significant."	Section 4.19.17 states, "Overall cumulative effects to wildlife resources… would be minor to moderate" and, "The effects described above are often amplified for special status wildlife." Therefore, impacts to special status species, if amplified, could rise to the level of significance.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.84	AR	" The DEIS greatly downplays the impacts that access roads can have on resources. Roads pose significant threats to the land and resources, including impacts on wildlife through direct and indirect mortality and habitat fragmentation. Although existing roads would be used for construction to the extent practicable, several new roads will need to be created. Roads, whether paved or primitive, inflict a horrific toll on wildlife. They facilitate inadvertent or deliberate disruption of wildlife and fragment habitat by carving otherwise large patches into smaller ones, resulting in negative impacts to interior habitat. Roads also directly eliminate wildlife habitat by occupying space within the ecosystem and by altering adjacent habitat. Roadside habitats experience increased temperature extremes and solar input and pollution from exhaust, herbicides, garbage, dust, and noise. These conditions can increase habitat disturbance by a minimum of 500–600 meters on either side."	Temporary construction routes would be reclaimed. Section 4.9.3 has been revised to specify locations for gates on BLM-managed public lands to prohibit four-wheel access to the centerline route. Mitigation measures added to Section 4.9 designating the centerline access as an administrative route is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the restrictions on vehicular use of the centerline.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.85	AR	" In the Southwest, roads and associated activities are the primary cause of extensive arroyo cutting during this century. Severe gully formation negatively affects soils, vegetation, and archaeological resources. Vehicular traffic directly destroys biological resources by crushing vegetation and microbiotic crusts. The resulting soil compaction retards the recovery of vegetation. In addition, off road vehicle (ORV) use can cause unsustainable erosion rates, exacerbate the spread of non-native invasive plants, cause user conflicts, and damage cultural sites."	Temporary construction routes would be reclaimed. Section 4.9.3 has been revised to specify locations for gates on BLM-managed public lands to prohibit four-wheel access to the centerline route. Mitigation measures added to Section 4.9 designating the centerline access as an administrative route is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the restrictions on vehicular use of the centerline. Chapter 4 provides analysis of impacts from construction activities, including the creation and use of access roads.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.86	WLF	" The DEIS states that "[t]he effect of habitat fragmentation from roads…is particularly important for smaller sensitive species, such as the Sonoran desert tortoise, Arizona chuckwalla, and reticulate gila monster, as the 'breaks' in the habitat either separate populations from each other resulting in genetic isolation, separate habitat components that are crucial at different life stages, or offer greater opportunities for predators" (pg. 4-236, Section 4.19.17). However, such impacts are not thoroughly discussed in the DEIS, and the BLM consistently assumes that impacts will be minor. Effects such as those described in this statement are not minor; in fact, they can be considered major in the long-term."	Sections 4.17 and 4.19.17 analyze the direct, indirect, and cumulative impacts to wildlife, including sensitive species.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.87	M&M	" Few measures to mitigate the effects of temporary and permanent roads are presented in the DEIS; these measures are not adequately discussed, nor are they likely to sufficiently reduce the threats to the resources. Adequate information is not provided in the DEIS to determine if the mitigation efforts that are identified will be suitable. For example, the DEIS states that "[i]f required by the underlying land owner or if APS finds it to be warranted, access roads could be gated to prevent access by unauthorized personnel" (pg. 2-9, Section 2.4.1.3). Would the BLM require gates on roads crossing its lands? If so, would these gates be locked? What monitoring or enforcement would occur to ensure that the public is not using these roads?"	Section 2.4.2.8 states, "Temporary construction roads, not required for future maintenance access, would be restored after construction of the Project is complete." The centerline access would be a permanent road that would remain after construction. Section 4.9.3 has been revised to: • Specify that the BLM would work with APS to develop a Construction Access Plan that would strictly limit construction access and operation of construction equipment to specific routes. • Specify that the BLM would designate the centerline access route as an administrative access route only; prohibition of recreational use of the centerline access route (except for single-track trail crossing of the centerline access) and speed limits would be enforced by BLM. • Specify locations for gates on BLM-managed public lands. Mitigation measures added to Section 4.9 designating the centerline access as an Administrative route is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.88	OHV	" Increased recreation as a result of the new or improved access roads is a potential threat; however, it is not discussed in the DEIS. BLM has, itself, recognized that off-road vehicle use can significantly degrade public lands and that users may not stay on established trails; it has also acknowledged that creation of spur roads from designated routes frequently occurs and can cause even greater impacts. Numerous studies have also shown that high percentages of off-road vehicle users do not stay on established trails, even when those trails are well marked.38 In fact, the BLM has had to close a number of areas to off-road vehicle travel due to considerable damage to environmental resources. Additional information about the potential impacts from increased use of existing roads and creation of new ones should have been included in the DEIS."	There would be no new or improved public access roads on BLM-managed public land as a result of the project. The centerline access would be a permanent road that would remain after construction. Section 4.9.3 has been revised to specify locations for gates on BLM-managed public lands. Mitigation measures added to Section 4.9 designating the centerline access as an administrative route is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.89	AR	" The Study Area is located near popular off-road vehicle routes and special areas, including the Castle Rock Springs Special Recreation Management Area; the DEIS states that access to portions of this area may be prohibited and that approximately seven percent of BLM-designated routes and three percent of two-track trails in the Study Area may be closed during construction but that they would be reopened following construction. Would these reopened routes provide access to any roads created as part of this project? Will access to project-specific roads be blocked?"	Section 4.9.3 states that the centerline access would be gated and fenced to a natural barrier where it intersects roads. The mitigation measures have been expanded to indicate that APS and BLM staff would monitor conditions. APS would be responsible for making further modifications if the measures are not effective. Routes would be reopened once construction and reclamation activities are completed in the specific areas of the routes. Single-track trails would intersect the centerline access, but this newly created access would not be authorized for recreational use, nor would it be expected to be used illegally on a routine basis, as the centerline would not provide the recreational experience single-track users are looking for.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.90	M&M	" Land management agencies have also found that gates do not provide an impermeable barrier as the public frequently tampers with them or creates other access points. These issues and their implications for this project should have been addressed in the DEIS. Suitable mitigation measures should also have been discussed in detail. For example, if gates are used to prevent unauthorized access to project roads, what enforcement and monitoring will occur to ensure that the public is not accessing these areas?"	Section 4.9.3 states that the centerline access would be gated and fenced to a natural barrier where it intersects roads. The mitigation measures have been expanded to indicate that APS and BLM staff would monitor conditions. APS would be responsible for making further modifications if the measures are not effective.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.91	M&M	" The DEIS also states that temporary roads will be closed once construction is completed and if the roads are no longer needed. However, how will these roads be monitored during the construction phase to ensure that the public is not negatively affecting resources? How long after construction will the roads be closed? The longer these roads remain open, the more potential there is for abuse by recreationists."	In response to other comments and concerns, BLM will work with APS to develop a Construction Access Plan to definitively identify access routes on BLM-managed public lands, particularly north of SR 74. Construction access north of SR 74 is envisioned to be limited such that no single-track OHV routes would be used, and a large portion of this area is closed to four-wheel OHV recreation. In addition, the EIS was revised to indicate that the centerline access would be designated an administrative route, and as such, restrictions on recreational use would be enforced by the BLM.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.92	AR	" Finally, the DEIS says that speed limits on project roads will be set at 20 mph and that they would be "strictly enforced" (pg. 2-13, Section 2.4.2.2). How will these speed limits be enforced? Without strict enforcement, it is highly unlikely that those traveling on the project area would adhere to the speed limit, including project staff and members of the public who access the area. Is there any funding available to ensure adequate enforcement activities on BLM lands?"	The EIS was revised to indicate that the centerline access would be designated an administrative route, and as such, speed limits would be enforced by the BLM. In addition, APS would monitor the route, and construction monitors would be employed, as described in Section 2.9. Environmental training for construction workers would also increase awareness and reduce the risk of mortality.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.93	AR	" We also object to the statement that "[p]ermanent roads associated with the transmission line (14-feet wide) would not measurably disrupt wildlife behavior as these roads would be used very infrequently, and would not be improved (i.e., paved). Direct fragmentation impacts to wildlife from permanent roads would be negligible" (pg. 4-191, Section 4.16.2.1). The DEIS does not provide information about how each species in the project area would respond to the presence of the roads, to disturbances on those roads, or to fragmentation caused by those roads. Without an understanding of these responses, the BLM cannot assume that impacts – especially fragmentation impacts – would be negligible."	While the analysis under the heading of Habitat Fragmentation in Section 4.16.2.1 does not provide analysis by species, it does make some general distinctions between different types of wildlife sufficient to determine meaningful impacts.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.94	EJ	"As illustrated in Figure 3.10-1, the proposed action route at its northwest section passes through Circle City which is considered to be a low income area. Further east, the proposed route runs into the Highway 74 corridor at the Peoria boundary and then crosses the highway in order to avoid planned upscale developments at Saddleback Heights, Vistancia, and Lake Pleasant Heights. To be fair, if low income people are adversely affected, upscale development along the Carefree Highway should be expected to bear a burden as well."	Section 4.10 has been revised and expanded in response to other comments, and now includes specific conclusions with regard to Environmental Justice impacts. The Environmental Justice portion of Section 4.10 now contains analysis of disproportionate effects to the identified low income block group.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.95	EJ	"To its credit, the DEIS devotes considerable space to Socioeconomics and environmental justice (3.10). It studied 17 block groups with a total population of over 39,000 people, and designated Block Group one, Circle City, as an environmental justice community because of a low income population of over 20 percent above that of the county. But the DEIS draws no conclusion from its findings, and does not discuss the inequitable treatment of Block Group one with respect to proposed development in Peoria. The Final EIS should complete this section and write out its conclusion to its Environmental Justice study."	Section 4.10 has been revised and expanded in response to other comments, and now includes specific conclusions with regard to Environmental Justice impacts.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.96	WLF	" Impacts to wildlife from the spread of non-native invasive plant species is not addressed in wildlife section."	Section 4.13.2.1 includes a discussion of this issue under Invasive and Noxious Plant Species. In addition, Section 4.19.17 also addresses this issue from a cumulative effects standpoint on wildlife habitat.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.97	VEG	" Even with noxious and invasive weed management plans, non-native species may still be introduced and spread."	Section 4.13.2.1 includes a discussion of this issue under Invasive and Noxious Plant Species.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.98	M&M	"Will vehicles entering site be washed throughout the lifetime of the project?"	Yes, this is addressed in Appendix 2A – Best Management Practices.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.99	LU	" If the RMP is amended and the line is allowed to be built north of SR74, we are extremely concerned that it will result in significant degradation of the land and in a diminished viewshed, especially in light of the fact that the proposal would not only run along SR 74 but would actually cross SR74 twice. This would nudge development further into the BLM lands and could result in a subsequent loss of interest by BLM to manage these lands for conservation. These public lands might then be sold or traded away in another poorly conceived exchange that shortchanges the public as occurred with the 1997 Saguaro National Park Land Exchange."	Table 1.5-1 explains the decisions to be made, and these decisions are specific to the future use of the public lands managed by the BLM.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.100	LU	"… While perhaps seeming improbable today, siting large scale infrastructure such as electric transmission lines north of SR74 raises the specter of massive development of private and state lands in the Lake Pleasant area sometime in the future, destroying any opportunity for proper consolidation and management in the public interest for wildlife habitat and recreation"	Development and land management beyond that described in Section 4.19 is not reasonably foreseeable and is beyond the scope of analysis of the EIS.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.101	SRMA	" According to the 2010 RMP40, these lands north of the SR74 are part of the Castle Hot Springs Management Unit and are worthy of protection for several reasons. According to the plan, no public lands in this area are available for disposal and no new utility corridors are designated (page 79). These lands include the following: Category II desert tortoise habitat A Class 2 Visual Resource Area Castle Hot Springs Special Recreation Management Area, which includes Hieroglyphic Mountains Recreation Management Zone (RMZ), Sheep Mountain RMZ, and Baldy Mountain RMZ Hells Canyon Wilderness The Recreation Management for this area emphasizes “preserving open space and retaining scenic and visual qualities” (page 80)."	Section 2.10 provides the rationale for the Agency Preferred Alternative.
Sandy Bahr, Chapter Director, Sierra Club - Grand Canyon Chapter	874.102	GEN	" This proposed right-of-way and RMP amendment should be rejected as they will result in degradation of habitat and public lands and will significantly impair the scenic nature of this area. This could also be the first step in pushing development further into the public lands and a means of promoting additional development on those lands, especially via future land exchanges."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Paula Rockcastle	878.1	OPP UR	"We recently purchased a house in the area where this project is proposed and is within a 1/2 mile to a mile of our house. We purchased this house in this location because of the beautiful area with gorgeous mountains views. This will be destroyed. The proposed corridor is unacceptable. There must be a better solution as to not effect so many people. Part of the East/West portion runs right behind our house, (North of 257th). Why can't this be further North towards Circle City. There is lots of land this can be put on further North. Many houses that are for sale in the area (and there are many), may remain vacant due to this project."	Statement of preference. Alternatives to the Proposed Action route that would place the transmission line along an alignment other than the east-west segment along Lone Mountain Road are described in Section 2.7, along with explanations as to why those routes were eliminated from detailed analysis in the EIS.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.1	WTR	"We have rated the DEIS as Environmental Concerns- Insufficient Information (EC-2), due to the lack of sufficient information to determine the extent of direct, indirect and cumulative impacts to waters of the U.S."	The EIS has been revised to respond to each of the EPA's concerns and comments and address the Insufficient Information.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.2	WTR	"…it is difficult to determine the extent of direct, indirect and cumulative impacts to waters if the delineation is not conducted until completion of the DEIS. Also, it is difficult to determine the Least Environmentally Damaging Practicable Alternative and compliance with CW A 404 without this baseline information."	Additional field work and modeling of impacts has occurred after publication of the DEIS, as part of a Preliminary Jurisdictional Delineation and that new information is incorporated into the FEIS in Section 4.15.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.3	WTR	"The statement of a broad estimate of potential impact to waters at 25.7 acres seems in conflict with other statements in the DEIS that APS plans to avoid discharges related to the power line construction."	Additional field work and modeling of impacts has occurred after publication of the DEIS, as part of a Preliminary Jurisdictional Delineation and that new information is incorporated into the FEIS in Section 4.15 in an effort to better clarify potential impacts.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.4	WTR	"For the FEIS, expand and clarify the discussion of impacts to jurisdictional waters to include an estimate of type(s) and acreage, and include a discussion of impact avoidance measures, mitigation availability, and compliance with the Guidelines and Mitigation Rule."	Additional field work and modeling of impacts has occurred after publication of the DEIS, as part of a Preliminary Jurisdictional Delineation and that new information is incorporated into the FEIS in Section 4.15 in an effort to better clarify potential impacts.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.5	WTR	"Based on the results of the Preliminary Jurisdiction Delineation, the FEIS should include a table and clear narrative on the direct, indirect/secondary and temporary impacts to waters, including wetlands."	Additional field work and modeling of impacts has occurred after publication of the DEIS, as part of a Preliminary Jurisdictional Delineation and that new information is incorporated into the FEIS in Section 4.15 in an effort to better clarify potential impacts.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.6	WTR	"The FEIS should include additional detailed information on the functions and locations of ephemeral washes that may be impacted. Natural ephemeral washes perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream. Healthy ephemeral waters with characteristic plant communities control rates of sediment deposition and dissipate the energy associated with flood flows. Ephemeral washes also provide habitat for breeding, shelter, foraging, and movement of wildlife. Many plant populations are dependent on these aquatic ecosystems and adapted to their unique conditions. Potential damage that could result from disturbance of flat-bottomed washes includes alterations to the hydrological functions that natural channels provide in arid ecosystems: adequate capacity for flood control, energy dissipation, and sediment movement, as well as impacts to valuable habitat for desert species."	The EIS has been updated in Section 3.15.1.3 to include a discussion on the functions that area ephemeral washes typically provide. Regarding location of the washes, the Project Record includes maps prepared for the Preliminary Jurisdictional Delineation.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.7	WTR	"The FEIS should quantify the likely impacts to ephemeral streams from the proposed project, and project alternatives, and discuss potential mitigation."	Additional field work and modeling of impacts has occurred after publication of the DEIS, as part of a Preliminary Jurisdictional Delineation and that new information is incorporated into the FEIS in Section 4.15 in an effort to better clarify potential impacts. This new information also includes applicable information on ephemeral washes.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.8	WTR	"The FEIS should commit to avoiding, if possible, or minimizing direct and indirect impacts to ephemeral streams (such as erosion, migration of channels, and local scour)."	BMPs, outlined in Appendix 2A, are already part of the Proposed Action and address minimizing direct and indirect impacts to ephemeral streams.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.9	WTR	"Provide, in the FEIS, additional information on the functions and locations of ephemeral washes in the project area that may be impacted and their hydrologic and biogeochemical roles in relationship to higher-order waters downstream."	The EIS has been updated in Section 3.15.1.3 to include a discussion on the functions that area ephemeral washes typically provide. Regarding location of the washes, the Project Record includes maps prepared for the Preliminary Jurisdictional Delineation.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.10	WTR	"The new 500/230 kV transmission line would result in the placement of between two and five towers within the 100 year flood hazard area (p. 4-179). These structures could impede flood flows or redirect flood flows to areas not currently within a flood hazard area by raising the base flood elevation. While the DEIS includes Best Management Practices to provide diversion structures that would be designed to minimize potential destabilization and erosion of adjacent and down gradient drainages, no additional details are provided."	Additional information and details have been added to the FEIS in Section 4.15.2.1 in regards to having structures located within flood hazard areas.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.11	WTR	"The FEIS should identify any areas subject to flash floods where structures are likely to be placed, discuss the impacts of the project on flood flows and demonstrate how flows will not be impeded and flood debris will not obstruct flows or result in scouring."	Additional information and details have been added to the FEIS in Section 4.15.2.1 in regards to having structures located within flood hazard areas.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.12	AIR	"The FEIS should also discuss the emissions of carbon monoxide with respect to de minimis levels and SIP Conformity."	Applicable information and discussion was added as requested to Section 4.2.2.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.13	VEG	"The EPA recommends that priority be given to alternative management practices that limit herbicide use, focusing, instead, on other methods to limit invasive species vegetation and decrease fire risk."	Additional details on APS' Invasive Plant Management Plan and proposed herbicide treatment activities has been either added to or referenced in the EIS. Measures in Appendix 2A (Noxious and Invasive Weed Management) are predominantly alternatives to herbicide use. Herbicides would only be used for treating noxious weeds where it is reasonable and prudent to do so and provided the herbicide being applied would be an effective treatment. Appendix 2B, APS' Transmission Management Program, has been updated in the EIS. However, Appendix 2A will remain unchanged.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.14	VEG	"In order to consolidate the numerous BMPs and mitigations and to strengthen the effort, the EPA recommends the development of an invasive plant management plan. If pesticides will be used to manage vegetation, the DEIS should disclose the projected quantities and types of chemicals to be used. The plan should also describe post-construction activities that will be required, such as surveying for invasive species following restoration of the construction site and measures that will be taken if infestations are found."	Additional details on APS' Invasive Plant Management Plan and proposed herbicide treatment activities has been either added to or referenced in the EIS. Measures in Appendix 2A (Noxious and Invasive Weed Management) are predominantly alternatives to herbicide use. Herbicides would only be used for treating noxious weeds where it is reasonable and prudent to do so and provided the herbicide being applied would be an effective treatment. Appendix 2B, APS' Transmission Management Program, has been updated in the EIS. However, Appendix 2A will remain unchanged.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.15	CUL	"The FEIS should discuss how any concerns raised by the Tribes were addressed and resolved. Provide an update on the status of the coordination with the Tribes and whether it is still ongoing. We recommend that any measures to reduce impacts to tribal and cultural resources that are developed be adopted in the ROD."	Background information on Native American Tribes is presented in Section 3.3.7. Native American Tribal consultation and coordination was presented in Section 5.5 of the EIS. Consultation is on-going and any mitigation measures to reduce impacts to tribal and cultural resources would be adopted in the ROD.
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.16	AIR	"On page 3-11, the DEIS states, "There is also a carbon dioxide attainment area with a maintenance plan." Recommendation: The FEIS should replace the word dioxide with the word monoxide."	The text was revised as recommended in the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Kathleen Martyn Goforth, Manager, Environmental Review Office (CED-2), EPA Region IX	879.17	AIR	"On page 4-17 in Table 4.2-7, the total for PM1 0 is 28.6 Tons/Month and for PM2.5 6.1 Tons/Month; these appear to be incorrect. Recommendation: The FEIS should replace PM1 0 total with 4.25 Tons/Month and the PM2.5 with 1.06 Tons/Month."	The text was revised based on the comment. However, the PM2.5 total was rounded up to 1.07 tons/month.
Jewel Ray Chaudhuri	880.1	SUP PA	"The purpose of this email is to let you know of our support for the PROPOSED ALTERNATIVE which is on the north side of State Route 74."	Statement of preference.
Jewel Ray Chaudhuri	880.2	OPP ALT3	"If lines are placed on the Carefree Highway Alignment, they will be visible from Trilogy and many parts of Vistancia and will mar the beauty of a community like Trilogy. We are concerned about the value of our property and how limiting our clear mountain views will affect future home sales."	Statement of preference.
Jewel Ray Chaudhuri	880.3	LU	"In addition, State route 74 is already an existing transportation corridor and it makes sense to place the power lines there."	Statement of preference.
Andrew J. Anderson, Corporate Counsel, Infinity Capital Golf Resources, LLC	882.1	OPP PA	"…we strongly object the proposed action as stated in the Draft EIS published in November, 2012…"	Statement of preference.
Andrew J. Anderson, Corporate Counsel, Infinity Capital Golf Resources, LLC	882.2	SAAA	"…it is in the public's best interest that the preferred route be situated along the south side of SR-74. (This route is contemplated under Alternative 2.) The routing of the Proposed ROW corridor clearly is not logical and in fact, flies in the face of common sense. The Proposed ROW originates at the Morgan Substation on the south side of SR-74. The Proposed ROW then crosses SR-74 just east of the Saddleback Heights project and proceeds on the north side of SR-74 for approximately 5 miles. The Proposed ROW remains on the north side of SR-74 and crosses SR-74 immediately west of the Saddleback Heights project. The Proposed ROW route results in a gerrymandered route which unnecessarily crosses SR-74 two times in a very short distance."	Statement of preference.
Andrew J. Anderson, Corporate Counsel, Infinity Capital Golf Resources, LLC	882.3	LU	"The location of Quintero Community, including Quintero Golf Club was selected for the uniqueness of its real estate and the serenity of its surroundings. With access off the SR-74 scenic corridor and surrounded by thousands of acres of BLM acreage, Quintero was able to represent to its residents that Quintero and the surrounding area would remain preserved and untouched for decades to come. In reliance on the uniqueness of the Quintero land, more than 100 million dollars was invested in the Quintero Community."	Statement of opinion. Comment registered and noted.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Andrew J. Anderson, Corporate Counsel, Infinity Capital Golf Resources, LLC	882.4	SOC	"The proposed ROW will have a direct effect on the Quintero Community and Quintero Golf and Country Club as the ROW. The presence of the transmission lines, monopole tower structures and supporting infrastructure nearby and within view of the Quintero project will negatively impact the value of real estate in the Quintero Community. The visibility of the transmission lines and monopole towers will devalue those lots and will diminish the pure golf experience that Quintero Golf Club currently provides to its guests. The vistas toward the Quintero community from SR-74 will be disturbed by the transmission lines and monopole towers."	The ROW would be 200 feet wide, 100 feet either side of centerline of the transmission line. The ACC-certificated corridor (referred to as the ACC-certificated route in the EIS) does extend beyond the Proposed Action/Preferred Alternative ROW; however, as depicted in the EIS, there are no plans for BLM to authorize APS to utilize this area in support of construction.
Andrew J. Anderson, Corporate Counsel, Infinity Capital Golf Resources, LLC	882.5	VIS	"Although the transmission lines will cross SR-74 to the east of the Quintero entrance, the ROW extends further past the entrance of the Quintero community and will allow APS and its contractors to construct structures and the store materials in close proximity to the Quintero entrance. This will certainly create an immediate negative visual impact and will detract and devalue the entrance to the project."	The ROW would be 200 feet wide, 100 feet either side of centerline of the transmission line. The ACC-certificated corridor (referred to as the ACC-certificated route in the EIS) does extend beyond the Proposed Action/Preferred Alternative ROW; however, as depicted in the EIS, there are no plans for BLM to authorize APS to utilize this area in support of construction.
Andrew J. Anderson, Corporate Counsel, Infinity Capital Golf Resources, LLC	882.6	SOC	"The actual impact on the Quintero Community and Quintero Golf Club will not be known for years and will be extremely difficult to quantify. However, it is clear in past instances in which electrical transmission infrastructure was constructed in close proximity to existing residential real estate that the value of that property was negatively impacted. The economic cascade will trickle down to local municipalities and taxing districts that will receive diminished tax receipts as a result in the permanent diminution of nearby real estate in value."	An analysis of socioeconomic impacts of all alternatives is in Section 4.10, including potential impacts to property values.
Andrew J. Anderson, Corporate Counsel, Infinity Capital Golf Resources, LLC	882.7	VIS	"The BLM obligated Quintero to take extraordinary measures to insure that the scenic corridor and the views of the area were not disturbed. In fact, millions of dollars were spent by Quintero's developer to bury the Community's incoming power supply, water delivery and blend the entrance and sightlines to the community into the natural topography and landscape. Quintero has gone since inception without signage to the entrance to the community in order to comply with the Visual Resource Management (VRM) Class III standards and requirements due to the strict requirements of the VRM. The Proposed ROW is inconsistent with the BLM's previous commitments to keep the north side of SR-74 in its natural state and requirements that were mandated on Quintero's developer. If the Proposed ROW is finalized, the actions of Quintero's developer of burying the power lines to the Quintero Community were unnecessary and millions of dollars will have been wasted."	Section 2.10 provides the rationale for the BLM's Agency Preferred Alternative. In addition, Chapter 1 has been revised to describe the BLM's multiple use mandate and how the ACC process played a role in the overall decision.
Andrew J. Anderson, Corporate Counsel, Infinity Capital Golf Resources, LLC	882.8	LU	"The location of the proposed ROW is a critical decision that will provide the path to further development and eventual destruction of the pristine desert environment."	Table 1.5-1 explains the decisions to be made and these decisions are specific to the future use of the public lands managed by the BLM.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Andrew J. Anderson, Corporate Counsel, Infinity Capital Golf Resources, LLC	882.9	SAAA	"…we respectfully request that the BLM … consider Alternative 3 which will create less environmental impact or take no action at this time.	Statement of preference.
Walter "Skip" Zahlmann	883	UC	Content unrelated to analysis	
Walter "Skip" Zahlmann	884	UC	Content unrelated to analysis	
Walter "Skip" Zahlmann	885	UC	Content unrelated to analysis	
Laura Canaca, Acting Chief, Habitat Branch, State of Arizona Game and Fish Dept.	886.1	RIP	"The Department recommends riparian areas and desert washes be avoided unless absolutely necessary."	Section 4.15.2.1 indicates that all washes would be spanned. Additional information on potential impacts to washes that potentially contain riparian habitat were incorporated into the FEIS, based upon additional field work that has been completed after publication of the DEIS.
Laura Canaca, Acting Chief, Habitat Branch, State of Arizona Game and Fish Dept.	886.2	SSS	"…we support the avoidance to the maximum amount possible for Category II and III desert tortoise habitat."	BLM is aware and concerned about impacts to desert tortoise and this is considered in the analysis and mitigation requirements. Section 4.16 analyzes impacts to desert tortoise habitat by the Proposed Action and the Action Alternatives. The EIS analyzes disturbances and degradation of Category II and III tortoise habitat. Mitigation specific to desert tortoise is provided in Sections 2.9.15 and 4.16.3.1.
Laura Canaca, Acting Chief, Habitat Branch, State of Arizona Game and Fish Dept.	886.3	OREC	"We recommend consideration be given to wildlife related recreation, specifically hunting within the analysis of the alternatives."	Analysis of potential impacts to hunting were added to the Chapter 4 Recreation sections.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Laura Canaca, Acting Chief, Habitat Branch, State of Arizona Game and Fish Dept.	886.4	SAAA	"We have determined Alternative 3-Carefree Highway Route, the most southern alignment of the project from I 79th Avenue to the Raceway Substation, as having the least potential for impacts on both wildlife resources and recreational uses. The area along this southern route has been planned for large residential developments (Saddleback Heights, Vistancia, Lake Pleasant Heights, etc.) and would consequently result in highly degraded quality and connectivity of habitat for wildlife. Additionally, this southern area is not known as a popular recreation area for OHV users, due to a mix of land ownership and access restrictions and would not likely require mitigation for loss of recreational uses."	Statement of preference noted.
Laura Canaca, Acting Chief, Habitat Branch, State of Arizona Game and Fish Dept.	886.5	GEN	"Alternative 2, just to the south along State Route 74 and the PA Alternative, north of State Route 74 transect is a popular OHV area and is composed of higher quality wildlife habitat. These routes would require mitigation to offset for the loss of OHV use as stated in the document and would in turn cause additional wildlife habitat modification that is not currently discussed within the analysis, also potentially requiring minimizing and/ or mitigation consideration. Even if mitigation was not implemented as stated, OHV users would still be displaced by the construction and changes in access, causing them to degrade previously undisturbed wildlife habitat as a potential cumulative impact consideration."	Required mitigation is specified by resource in Chapter 4 and is summarized in Section 2.9.
Laura Canaca, Acting Chief, Habitat Branch, State of Arizona Game and Fish Dept.	886.6	SAAA	"Therefore, the Department believes Alternative 3, followed by Alternative 2, pose the least potential impacts to wildlife resources and recreational uses."	Statement of preference.
Laura Canaca, Acting Chief, Habitat Branch, State of Arizona Game and Fish Dept.	886.7	OPP PA	"The Proposed Action Alternative would have the most overall potential for impacts to wildlife resources and recreational uses due to the location, current and anticipated uses, and wildlife habitat quality."	Statement of preference.
Walter "Skip" Zahlmann	887.1	UC	Content unrelated to analysis	
Richard Stuhan, Siting Consultant Senior, APS	888.1	SUP PA	"APS supports the Bureau of Land Management's ("BLM") identification of the Proposed Action route as the Agency Preferred Alternative as it is consistent the decision of the Arizona Corporation Commission (Decision No. 70850, March 17, 2009)."	Statement of preference.
Richard Stuhan, Siting Consultant Senior, APS	888.2	GEN	"Section ES.4.4, page ES-7 does not clearly differentiate where the federal ROW is needed. APS requests that this section be revised to clearly explain that a federal ROW is needed for Alternative 3."	Section ES.4.4 was revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.3	GEN	"In Section ES.6.1, page ES-9 the phrase “routine watering” is not defined. This could be clarified by adding a reference to Appendix 2A for details."	Section ES.6.1 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.4	CUL	"Section ES.6.2, page ES-9, does not reflect current BLM and SHPO consultation information. APS requests the text be revised to read: “Ten National Register-eligible cultural resource sites (i.e., historic properties) are known to be within the Proposed Action route. These include three historic sites, five prehistoric sites, and two multi-component sites.”	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.
Richard Stuhan, Siting Consultant Senior, APS	888.5	CUL	"With respect to Section ES.6.2, APS requests revising the second and third paragraphs on page ES-10 (Cultural Resources section) to read: “Operation, maintenance, and abandonment of the transmission line are not anticipated to cause direct impacts in addition to those resulting from construction, but if BLM and ASLD conclude that National Register-eligible properties might be threatened, BLM and ASLD will work with APS to implement measures to avoid adverse impacts. BLM and/or ASLD staff, perhaps assisted by Arizona Site Stewards program volunteers, would conduct long-term monitoring as warranted.”	Section ES.6.2 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.6	GEN	"Section ES.6.6, page ES-12, the second sentence of the last paragraph suggests that EHV lines attract lightning, therefore increasing lightning strike risk in the surrounding area. This is not true. APS recommends removing the following sentence in that paragraph: “Physical presence of the transmission line may increase the likelihood of lightning strikes in the vicinity of the transmission line and structures, which would lead to a small increased risk of lightning caused fires along the entire route of the Project.”"	Section ES.6.6 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.7	GEN	"In Section ES.6.11, page ES-15, APS recommends that the following text be inserted at the end of the first sentence in the second paragraph: “to the extent practicable.” APS also requests that the second sentence of that same paragraph be revised to note that in some instances construction access roads outside of the transmission line ROW would be used on an ongoing basis for operations and maintenance."	Section ES.6.11 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.8	GEN	"In Section ES.6.14, page ES-18, APS recommends that the second sentence of the fourth paragraph be revised to say: “To the extent practical, all washes would be spanned.”	Section ES.6.14 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.9	GEN	"In Section 1.1.1, page 1-1, APS requests that its name be revised to say “Arizona Public Service Company.”	Section 1.1.1 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.10	GEN	“Section 1.1.2 implies that APS did not participate in the development of the Bradshaw- Harquahala Resource Management Plan. APS requests that this section be revised to clarify that APS did participate and provide comments during the development of the RMP, including submittal of a letter identifying the area along SR 74 as a potential future utility corridor.	Additional information was added to Section 1.1.2 for clarification, per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.11	GEN	"In Section 1.5.4, page 1-14, APS requests that the ”State Historic Preservation Act (A.R.S. 41- 861 to 41-864)” be inserted as a regulatory requirement column revision to the first line of Table 1.5-3 by adding to the third column of table because that statute also stipulates consultation with the SHPO for projects on state land.	Section 1.5.4 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.12	GEN	"Also in Section 1.5.4, page 1-14, APS requests a revision to Table 1.5-3 by inserting a line after the first entry to indicate an Arizona Antiquities Act permit would be required from the Arizona State Museum pursuant to the Arizona Antiquities Act (A.R.S. 41-841 to 41-847) for investigation of archaeological, historical, and paleontological sites and objects on state land.	Table 1.5.3 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.13	GEN	" In Section 2.3.2, page 2-5, there are examples of short-term ROWs that may be necessary as part of the Project. This comment is intended to clarify that the list of examples is not complete, i.e., geotechnical testing and other temporary or short-term uses of public land are not listed."	Section 2.3.2 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.14	GEN	" In Section 2.4, page 2-6, the second paragraph states the transmission line “would be constructed on single-pole steel structures…” implying that no other structure types would be used. However, elsewhere in the document the potential for different structures is mentioned. Therefore, APS requests this sentence be revised to read “…would typically be constructed…”"	Section 2.4 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.15	GEN	" In Section 2.4, page 2-6, in the second sentence of the second paragraph replace the word “would” with “may.”"	Section 2.4 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.16	GEN	" In Section 2.4, page 2-7, the text in Table 2.4.1 identifies the 230kV circuit as using a single circuit per phase. However, APS is considering using either a single or a two bundle conductor option as described in Section 2.4.1.2. APS requests the text in the table be revised to be consistent with the text in Section 2.4.1.2."	Table 2.4.1 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.17	GEN	" In Section 2.4.1.1, page 2-7, the text states “self-weather finish available for tubular steel structures only this finish is not available for lattice structures.” APS requests a sentence be added to clarify that the pole structures would be dulled galvanized or self-weathering steel, as the self-weathering finish is not available for lattice structures, which will have a galvanized finish."	Section 2.4.1.1 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.18	GEN	" In Section 2.4.1.1, page 2-7, the text states structure type selection will include “…coordination with underlying land owner.” APS does not intend to coordinate various structure types with private landowners along the route, though does commit to coordination with the appropriate land-managing agency. Similar language occurs throughout the document and APS requests a change be made to this section and conforming change in the document as a whole."	Text revision made document-wide.
Richard Stuhan, Siting Consultant Senior, APS	888.19	GEN	" In Section 2.4.1.2, page 2-8, APS requests a revision to clarify that the Project could include two 96-pair fiber optic/static neutral cables or a single 96-pair fiber optic/static neutral cable with a single steel static shield wire. That is, APS may need only one fiber optic cable for both the 500kV and 230kV circuits, but a static shield wire would then be installed above the 230kV circuit."	Section 2.4.1.2 was revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.20	GEN	" In Section 2.4.1.3, page 2-9, APS requests a revision to clarify that APS does not intend to use gravel at drainage crossings. APS requests the following change: "Graveling dirt access roads is not anticipated or proposed, although it may be necessary where access roads intersect paved roads to prevent track out.""	Section 2.4.1.3 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.21	GEN	" The following statement in Section 2.4.1.3, page 2-9, reads as though BLM is authorizing a separate ROW for the permanent construction access road: "A 14-foot wide permanent access route parallel to the transmission line within the ROW would provide construction access, and would require authorization on associated BLM lands." APS requests that this sentence be restated to clarify that the 14–foot-wide permanent access road would be within the granted ROW and when temporary construction access or access for operations and maintenance outside of the ROW is necessary, authorization would be required on associated BLM lands."	Section 2.4.1.3 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.22	GEN	" In Section 2.4.1.3, page 2-9, in the second sentence of the second paragraph, APS requests that the phrase "avoid impacts" be replaced with "minimize impacts." In Section 2.4.1.3, page 2-9, and throughout the document, the text refers to the "underlying land owner" (or "land owner"), when it would be more appropriate to reference an agency with jurisdiction. Specifically, the statement that "APS would coordinate with ADOT…" should be modified to explain that paved acceleration and deceleration lanes would be removed if required by the entity with jurisdiction over the roadway. APS recommends that the use of the term "land owner" be reviewed throughout the document."	Section 2.4.1.3 was revised per the comment. Text revisions made document-wide to address change from land owner to appropriate land management agency.
Richard Stuhan, Siting Consultant Senior, APS	888.23	GEN	" In Section 2.4.2.1, page 2-10, APS requests the statement regarding the transportation of structure components and associated hardware be clarified to include transportation by truck or other means of transportation, including helicopter use."	Section 2.4.2.1 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.24	GEN	" In Section 2.4.2.1, page 2-10, the sequence of activities described in the first paragraph is a typical sequence; therefore, APS requests that the word "would" be changed to "could.""	Text in Section 2.4.2.1 revised per comment to "…would typically…"
Richard Stuhan, Siting Consultant Senior, APS	888.25	GEN	" In Section 2.4.2.2, page 2-12, the document states that "water would be applied on a continuous basis in areas of construction and at least three to four times daily in non-active construction zones for dust control purposes." However, the objectives of dust control may be met through a variety of measures, as contemplated by the mitigation measures included in Section 2.9.1. APS requests that Section 2.4.2.2 be revised to be consistent with Section 2.9.1."	This statement was removed from the subsection "Construction Utilities" as the next subsection "Dust Control" fully addresses how dust control would be accomplished for the project.
Richard Stuhan, Siting Consultant Senior, APS	888.26	GEN	" In Section 2.4.2.4, page 2-13, the Stormwater/Wastewater Management and Erosion Control text describes wastewater would be generated during construction from concrete loads emptied from trucks and from washing construction equipment, which if required, would be performed offsite. The subsequent sentence indicates that wastewater would be managed such that there would be no discharge offsite, which appears contradictory. This comment is intended to clarify that APS would manage wastewater from concrete truck washdown and cleaning of construction equipment such that there would be no discharge to surface waters."	Section 2.4.2.4 was revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.27	GEN	" In Section 2.4.2.4, page 2-15, the description of native plant protection appears to be broader than what is explained elsewhere in the document. This comment intends to clarify that APS would comply with the Arizona Native Plant Law and, to the extent feasible, minimize the destruction of protected native plants during Project construction."	No revisions were necessary in this section.
Richard Stuhan, Siting Consultant Senior, APS	888.28	GEN	" In Section 2.4.2.4, page 2-15, the text states that nursery locations would be identified for salvaged plants. This comment intends to clarify that APS may relocate salvaged plants to the edge of the ROW as an option to establishing nursery locations."	Section 2.4.2.4 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.29	GEN	" In Section 2.4.2.5, page 2-16, the description of lattice structure assembly does not include the potential for assembling the structures at each site. This comment is intended to clarify that APS may either assemble the structures in sections in the laydown area then transport the sections for assembly at the structures sites or APS may do the full structure assembly at each structure site."	Section 2.4.2.5 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.30	VEG	" In Section 2.4.3.4, pages 2-21 and 2-22, APS suggests noting that the vegetation clearance distances may change from those listed in the Draft EIS in tables 2.4-5 and 2.4-6. Over the life of the Project, APS will follow current industry standards and regulatory requirements. APS is required to control vegetation in proximity to high-voltage transmission lines in conformance with NESC and NERC (FAC 003) Standards. Additionally, the information regarding the desired outcome of Integrated Vegetation Management is provided in Section 4.13.2.1, and need not be repeated within the description of the proposed action."	Section 2.4.3.4 was revised per the comment to indicate APS would follow industry standards. The desired outcome of Integrated Vegetation Management was the subject of other comments and was revised accordingly, and left in place.
Richard Stuhan, Siting Consultant Senior, APS	888.31	OHV	" In Section 2.8, Table 2.8-1, and the supporting information from Section 4.9.2.2, page 4-79, indicates that The Boulders Staging Area access road would be crossed by the ROW; this crossing is not depicted on Figures 3.9-2 and 3.9-3, which indicates the access road likely would not be crossed by the ROW. Therefore, APS requests that this section be revised to indicate that no impacts would occur during construction to the Boulders Staging Area access road during construction. Similarly, the impacts noted in Table 2.8-1 should be revised accordingly."	Table 2.8-1 and Section 4.9.2.2 were revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.32	CUL	" In Section 2.8, page 2-68, APS suggests correcting the site counts in Table 2.8-1. The second line (Prehistoric) under Proposed Action column should be 5 (not 4) and the entry in the Alternative 2 column should be 4 (not 3)."	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.
Richard Stuhan, Siting Consultant Senior, APS	888.33	GEN	" In Section 2.8, page 2-76, Table 2.8-1 presents indicators to compare the impacts of the alternatives. It seems unclear why, under the Land Use and Range resources, the indicator "Compliance with Land Management Plans and Zoning" does not include information related to the local land use plans of Buckeye, Surprise, and/or Peoria, yet such plans are included as an indicator under visual resources. APS requests that these analyses be revisited and that the document articulate consistency or conflict with the respective jurisdictional plans for land use and visual resources for each alternative.	Table 2.8-1 and Section 4.6 were revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.34	CUL	" In Section 2.9.2, page 2.81, to be consistent with discussion of best management practices in Appendix 2A, APS requests the second sentence of third paragraph on page 2-81 be revised to read: "Procedures for scientific investigations, reporting, and long-term preservation of data and collections would be specified in a Historic Properties Treatment Plan implemented in accordance with the terms of a Section 106 Memorandum of Agreement (MOA) executed to address any identified adverse effect." (MOA should be added to the list of acronyms.)"	Section 2.9.2 and Acronyms in Section 6.2 revised per comment.
Richard Stuhan, Siting Consultant Senior, APS	888.35	CUL	" In Section 2.9.2, page 2-81, APS requests that the second paragraph be revised as follows: "Under the Proposed Action, Alternative 1, or Alternative 2, spanning the historic properties near the Agua Fria River may not be possible. If not, supplemental Class III cultural resource survey would be conducted so that options for avoiding impacts by shifting the alignment to the east could be considered.""	Additional cultural resource inventories and a more detailed siting analysis was conducted between the DEIS and FEIS. Applicable information from these additional inventories and clarification on avoidance of historic properties near the Aqua Fria River has been added to the EIS in Section 4.3.2.1.
Richard Stuhan, Siting Consultant Senior, APS	888.36	M&M	" In Sections 2.9.6 and 4.7.3.1, pages 2-82 and 4-72, under the General heading, second paragraph, the mitigation lacks measurable definition; APS suggests mitigation be consistent with the State approval of the Project. As required by the Arizona Corporation Commission (ACC), through the conditions of a Certificate of Environmental Compatibility (CEC), APS shall make every reasonable effort to identify and correct, on a case-specific basis, all complaints of interference with radio or television signals from operation of the transmission line and related facilities addressed in the CEC. APS shall maintain written records for a period of five years of all complaints of radio or television interference attributable to operation, together with the corrective action taken in response to each complaint. All complaints shall be recorded to include notations on the corrective action taken. Complaints not leading to a specific action or for which there was no resolution shall be noted and explained."	Sections 2.9.6 and 4.7.3.1 were revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.37	GEN	" In Section 2.9.6, pages 2-82 (and also in the Executive Summary) and subsequent impact analyses in Section 4.7, the text reads that construction activities would be confined to the hours of 7:00 am to 7:00 pm as typical or normal working hours. While this generally may be the case, it may not apply to all construction activities, which could begin earlier, particularly when sunrise occurs prior to 7:00 am. Typical summer hours could be 5:00 am to 4:00 pm while typical winter hours could be 6:00 a.m. to 5:00 pm. This comment is intended to clarify that APS would restrict noise-generating construction activities, such as the use of heavy equipment or helicopters, within 0.5-mile of residential areas to the hours of 7:00 am and 7:00 pm.	Sections 2.9.6, the Executive Summary, and Section 4.7 were revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.38	GEN	" With reference to Section 2.9.6, page 2-82, APS suggests clarifying that the contractor safety requirements in the appendix of the POD would typically be employed during construction and APS employees receive annual health and safety training, which includes fire prevention and response. These requirements, together with information described in the Health and Safety Plan (and Emergency Response Plan) will cover fire protection efforts associated with this Project. That is, project-specific fire prevention and response training is not proposed. APS expects to provide updated information in the H&S Plan as part of the POD."	Section 2.9.6 was revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.39	AR	" In Sections 2.9.8 and 4.9.3, pages 2-83 and 4-88, the DEIS suggests that no use of any singletrack routes would occur for construction. While generally, this is APS" intent, there may be a need to cross one or more single-track routes for construction access, depending on final design and mitigation requirements associated with other resources. In the event a single-track route is crossed, APS would provide barriers, such as fencing, to restrict access to the ROW from the single-track route (similar to what would be implemented at four-wheel OHV access route crossings), to the extent practicable.	Other comments were received regarding impacts to single-track OHV routes. BLM will work with APS to prepare a Construction Access Plan, which will definitively identify construction access routes to assure that there would be no loss of single-track trail, as indicated in the EIS.
Richard Stuhan, Siting Consultant Senior, APS	888.40	GEN	" In Section 2.9.12 and 4.13.3.1 the text states: "The area around transmission line structures and abandoned access roads would be reclaimed according to BLM stipulations in the ROW grant." The statements would be clarified with a reference to the reclamation plan. APS suggests the following clarification: "Areas of temporary disturbance, identified in Table 2.4-4, would be reclaimed according to BLM stipulations in the ROW grant and the final reclamation plan.""	Section 2.9.12 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.41	M&M	" In Sections 2.9.12 and 4.13.3.1, the text identifies restoration mitigation for areas of significant ground disturbance or recontouring. APS does not anticipate significant ground disturbance as a result of the proposed action and requests deleting the term "significant for ground disturbance", and if appropriate, reference the reclamation plan."	Sections 2.9.12 and 4.13.3.1 were revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.42	M&M	" In Sections 2.9.12 and 4.13.3.1, the text states: "…all existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line." APS requests revising this sentence to clarify „equal or better condition" and the criteria by which existing roads could be subject to this mitigation."	Sections 2.9.12 and 4.13.3.1 were revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.43	M&M	" In Sections 2.9.12 and 4.13.3.1, the text state: "Species protected by the Arizona Native Plant Law would be relocated and transplanted." APS understands that there are several levels of protection under the Arizona Native Plant Law, not all levels provide the same types of protection. The Arizona Native Plant Law does not prohibit the destruction or require relocation and transplantation of protected plant species. As written, this mitigation could require more relocation and transplantation of protected plant species than required by law. APS requests clarification that the intent is for APS to abide by the Arizona Native Plant law."	Sections 2.9.12 and 4.13.3.1 were revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.44	M&M	" In Sections 2.9.15 and 4.16.3, the text requires monitoring of ground clearing/disturbing activities that could affect special status species. It is unclear what criteria would be used to identify where monitoring would occur, what the monitoring program would include, and where along the proposed ROW such monitoring is warranted. This should be clarified."	Sections 2.9.15 and 4.16.3 were revised per this comment and others regarding the ambiguity of monitoring requirements.
Richard Stuhan, Siting Consultant Senior, APS	888.45	M&M	" In Sections 2.9.15 and 4.16.3.1, the text requires compensation for desert tortoise habitat loss. APS requests that it be clarified that this would apply only to tortoise habitat loss on BLM administered land. In addition, other mitigation measures referencing the Final Report on Compensation for the Desert Tortoise or Desert Tortoise Habitat Management on Public Lands in Arizona apply only to BLM-administered land."	Sections 2.9.15 and 4.16.3.1 were revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.46	M&M	" Sections 2.9.15 and 4.16.3.1 specify the speed limit of 20 mph as mitigation to reduce potential impacts on desert tortoise. Rather than installing signs, APS suggests this mitigation be achieved through a Best Management Practice that prescribes speed limits for all unpaved construction and maintenances access roads."	BLM would designate the centerline access as an administrative route and would enforce the 20 mph speed limit; as such the route would need to be signed during construction.
Richard Stuhan, Siting Consultant Senior, APS	888.47	GEN	" In Section 2.9.13, page 2-87, last paragraph, implies that individual landowners will be consulted to arrive at an amicable decision regarding design and infrastructure type. Rather, APS will consult land-managing agencies in the decision making process."	Section 2.9.13 was revised per the comment. Text revisions made document-wide to address change from land owner to appropriate land management agency.
Richard Stuhan, Siting Consultant Senior, APS	888.48	CUL	" In Section 3.3.5.1, page 3-27, to reflect accurate site count, APS requests revising the second paragraph to read: "A total of 27 archaeological and historical sites have been identified along the Proposed Action route (Table 3.3-1). The sites included seven prehistoric sites, 18 historic sites, and two sites with both prehistoric and historic components. Six of the sites are on public land managed by BLM, 18 are on state land, one is on privately owned land and two overlap state and privately owned land.""	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.
Richard Stuhan, Siting Consultant Senior, APS	888.49	CUL	" In Section 3.3.5.1, page 3-27, to reflect BLM and SHPO consultation, APS requests revising the second paragraph to read: "BLM, in consultation with the SHPO, determined that 10 of these sites are eligible for the National Register. Five of the six prehistoric sites and the two prehistoric components of the multicomponent sites AZ T:3:350(ASM) and AZ T:3:351(ASM) were determined eligible under Criterion D for their potential to yield important information about the prehistoric occupation of the region. . . . Four other Hohokam sites along the Agua Fria River, including sites AZ T:3:11 and 353(ASM) and multi-component sites AZ T:3:350 and 351(ASM) also might have buried features or could be temporary, limited activity sites."	The text was revised to include, "BLM, in consultation with the SHPO, determined…" but the site counts reflects the 200 foot wide corridor not the 400 foot wide inventory corridor, so the number of sites stayed the same.
Richard Stuhan, Siting Consultant Senior, APS	888.50	CUL	" In Section 3.3.5.1, page 3-28, APS requests revising: third line of third paragraph to indicate correct date as follows: " . . .developed between 1912 (not 1921) and 1955 . . ." paragraph 4 to read: "The other 15 historical sites are evaluated as ineligible for the National Register. Five of those sites are dumps or scatters of domestic trash with no features other than artifact concentrations: AZ T:2:145, 146, and 147(ASM), AZ T:3:347(ASM), and AZ T:6:137(ASM)…" paragraph 5 to read: "Seven of the remaining historic resources are roads. No artifacts have been recorded along three of those: AZ T:3:200, 201, and 256(ASM)…" paragraph 6 to read: ". . . to postdate 1940. Site AZ T:6:138(ASM) has a shallow pit that might reflect prospecting activity. Further study of these sites . . . ."	Text change was made to third line of third paragraph to correct 1921 to 1912 date. The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor. Therefore the next three changes will not be made.
Richard Stuhan, Siting Consultant Senior, APS	888.51	CUL	" In Section 3.3.5.2, page 3.29, APS suggests correcting site count in paragraph 3 from "17 sites" to "21 sites."	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.52	CUL	" In Section 3.3.5.3, page 3-29, APS suggests correcting the site count in the first sentence of paragraph 5 from “Nineteen” to “Twenty-three.”	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.
Richard Stuhan, Siting Consultant Senior, APS	888.53	CUL	" In Section 3.3.5.4, page 3-29, APS suggests correcting the site counts in second sentence of paragraph 7 from “Sixteen archaeological” to “Eighteen archaeological.”	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.
Richard Stuhan, Siting Consultant Senior, APS	888.54	CUL	" In Section 3.3.5.4, page 3-30, APS suggests correcting the site counts in paragraph 2 to read: “All 14 historical resources . . . The other 11 historical resources are evaluated as ineligible . . . Those ineligible historic resources included six dumps or scatters of circa 1920s to 1960s domestic trash: AZ T:2:144, 145, 146, 147, and 148(ASM), and AZ T:6:137(ASM). Four of the other ineligible historic resources are minor local roads, AZ T:3:200, 201, 344, and 353(ASM). . . . .and cross the Alternative 3 route. Site AZ T:6:138(ASM) has a shallow pit that may be related to prospecting.”	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.
Richard Stuhan, Siting Consultant Senior, APS	888.55	CUL	" In Table 3.3-1, page 3-31 and 3-32, the table is missing entries for four sites: Lake Pleasant Road/AZ T:3:256(ASM), Historic Road, Not eligible, along Proposed Action, Alt. 1, and Alt. 2 routes AZ T:3:353(ASM)/AZ T:3:30(ASU), Prehistoric habitation site, Eligible, along Proposed Action, Alt. 1, and Alt. 2 routes AZ T:6:137(ASM), Historic Trash, Not eligible, along Proposed Action, Alt.1, Alt. 2, and Alt 3 routes AZ T:6:138(ASM), Historic, possible prospecting site, Not Eligible, along Proposed Action, Alt. 1, Alt. 2, and Alt. 3 routes The totals for the columns should be Proposed Action - 27 (not 23), Alt. 1 - 28, Alt 2 - 20, and Alt 3 –18. Suggest revising note: These 21 sites are along the Alternative 1 route outside the 0.5-mile."	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.
Richard Stuhan, Siting Consultant Senior, APS	888.56	LU	" In Section 3.6.3.2, page 2-98, additional information should be included regarding the ACC Biennial Transmission Assessment (BTA) within the paragraph related to the ACC. The BTA process requires transmission providers to file a 10-Year Plan every January 31 with the ACC. Biennially, the ACC assesses the 10-Year Plans to determine the adequacy of the existing and planned facilities in the state to reliably meet the present and future energy needs of the state. The analysis is guided by Arizona best engineering practices coupled with the use of regional and national reliability council criteria and standards. The Sun Valley to Morgan Project has been included in the Company"s 10-Year Plan filings and has been found to be beneficial to the reliability needs of the Project area.	Sections 3.6.3.2 and 4.6.2.1 were revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.57	LU	" In Section 3.6.3.4, page 3-56, the description of future utilities includes only a 230kV line from the future Sun Valley Substation to the future Trilby Wash Substation. This comment is intended to clarify that APS has planned and completed the permitting for a new 500kV transmission line from the Palo Verde Generating Station area to the future Sun Valley Substation (through the future Delaney Substation), which provides one potential source of power that would be carried through the connection between the Sun Valley and Morgan substations."	Section 3.6.3.4 and Appendix 4B (if necessary) were revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.58	LU	" In Section 3.6.2.7, Table 3.7-7 does not include the units from the distance from structure, which should be noted as feet based on the information included in APS' CEC Application (URS 2008). In addition, APS requests that the values for the distance from the structure be corrected to be consistent with the referenced document, and read as follows (which would represent the worst-case scenario at the edge of right-of-way for the transmission lines): (see table in letter)	Section 3.6.2.7, Table 3.7-7 revised per the comment and information provided.
Richard Stuhan, Siting Consultant Senior, APS	888.59	M&M	"In Chapter 4, as well as other areas of the document where mitigation measures are described, APS requests that the document clearly state which mitigation measures apply to BLM administered land, State Trust land, and private land, as requirements may vary based on jurisdiction."	Section 2.9 and mitigation sections in Chapter 4 revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.60	CUL	" In Section 4.3.2.1, page 4-25, the text requires that construction work within a 50-meter area cease if unanticipated cultural resource discoveries occur. The term "area" is unclear. This comment is intended to clarify that APS would cease construction activities within 50 feet from the boundary of the discovery."	Section 4.3.2.1 revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.61	CUL	" In Section 4.3.2.1, page 4-25, the cultural resource Monitoring and Discovery Plan discussed in the second paragraph of the Construction section is not tied to a MOA intended to address a Section 106 adverse effect. The last sentence of the section indicates that BLM might not make a determination of an adverse effect (and therefore an MOA would not be needed) if all National Register eligible properties can be avoided by construction activities. APS requests that the paragraph be revised to read: "All sites would be avoided where practicable by Project design, such as locating transmission towers, access routes, and other facilities outside site boundaries; or by using helicopters for construction in sensitive areas. If avoidance is not feasible due to technical issues or resource conflicts, BLM would develop a MOA to address the adverse effect. Regardless of whether an MOA is required, BLM and ASLD would work with APS to develop a Discovery Plan, and if warranted a Monitoring Plan, which would define procedures for evaluating and treating discoveries of unrecorded cultural resources or recognition of unanticipated adverse effects." Start new paragraph with "[Ten] National Register-eligible cultural resource sites. "	Section 4.3.2.1, revised per the comment. The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor, thus no changes will be made.
Richard Stuhan, Siting Consultant Senior, APS	888.62	CUL	" In Section 4.3.2.1, page 4-25, APS requests the site count be changed from "Nine" to "Ten" in the last complete sentence."	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.
Richard Stuhan, Siting Consultant Senior, APS	888.63	CUL	" In Section 4.3.2.1, page 4-26, APS requests the site count be changed from "four" to "five" in the first sentence as follows: " . . . and the Beardsley Canal), five prehistoric sites (AZ T:3:10(ASM), AZ T:3:11(ASM), AZ T:3:325(ASM), AZ T:3:348(ASM), and AZ T:3:353(ASM), and . . ."	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.64	CUL	" In Section 4.3.2.1, page 4-26, a cultural resource Monitoring and Discovery Plan discussed in the second paragraph of the Operations, Maintenance, and Decommissioning section is not tied to a MOA intended to address a Section 106 adverse effect. The last paragraph of the previous section indicates that BLM might not make a determination of adverse effect (and therefore an MOA would not be needed) if all National Register eligible properties can be avoided by construction activities. APS requests revising the paragraph to be consistent with Section 2.9.2 to read: . . . Procedures would be implemented, as warranted, to ensure that if any National Register-eligible properties in the ROW are designated for avoidance by construction activities, and that they would not be inadvertently damaged during operation, maintenance, and decommissioning of the project. If BLM and ASLD conclude that National Register-eligible properties might be threatened, BLM and ASLD would work with APS to implement measures to avoid adverse impacts. BLM and/or ASLD staff, perhaps assisted by Arizona Site Stewards program volunteers, would conduct long-term monitoring as warranted. Long-term monitoring on privately owned land would be at the discretion of the land owner."	Section 4.3.2.1, revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.65	CUL	" In Section 4.3.2.3, page 4-29, APS requests the site count be changed from “Eight” to “Nine” in the first sentence to read: “Nine National Register-eligible cultural resources . . .”"	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.
Richard Stuhan, Siting Consultant Senior, APS	888.66	CUL	" In Section 4.3.3, page 4-31, to clarify responsibility for implementing long-term Monitoring and Discovery Plan, APS requests that the last sentence in first paragraph be revised to read: “BLM and/or ASLD staff, possibly assisted by Arizona Site Steward Program volunteers, would monitor and document the condition of National Register-eligible properties within the ROW as warranted.” APS also requests that second paragraph be revised to read: “If not, supplemental Class III cultural resource survey would be conducted so that options for avoiding impacts by shifting the alignment to the east could be considered.”"	Section 4.3.3, revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.67	CUL	" In Section 4.3.3, page 4-32, second sentence of second paragraph, APS requests that the terms “Data Recovery Plan” be replaced with “Historic Properties Treatment Plan” so that it is consistent with discussion of best management practices in Appendix 2A."	Section 4.3.3, revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.68	AR	" In Section 4.6.1, page 4-52, the analysis states that the permanent access road would be constructed within the ROW along the centerline of the ROW. This comment is intended to clarify that APS will locate the permanent access road within the transmission line ROW to the extent practicable, the road may not be along the centerline; however, the road will be located where appropriate with consideration of engineering and environmental constraints, and associated mitigation."	Section 2.4.1.3 was revised to indicate that the permanent access road within the ROW would be referred to in the document as the centerline access. Section 4.6.1 revised to refer to centerline access, but not indicate that the road would be built along the centerline. Centerline Access was added to the document glossary, with a definition indicating that the route may not exactly follow the centerline of the transmission line, but provide access within the ROW.
Richard Stuhan, Siting Consultant Senior, APS	888.69	OHV	" In Section 4.9.2.2, page 4-79, the analysis indicates that The Boulders Staging Area access road would be crossed by the ROW; this crossing is not depicted on Figures 3.9-2 and 3.9-3, which indicates the access road likely would not be crossed by the ROW. APS requests that this sentence be clarified to indicate no impacts would occur during construction to the Boulders Staging Area access road during construction. Similarly, the impacts noted in Table 2.8-1 should be revised accordingly."	Table 2.8-1 and Section 4.9.2.2 were revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.70	SOC	"In Section 4.10.2.2, page 4-99, the analysis states, "Offsetting the loss of future development would be the lease revenue that APS pays annually on State Trust lands to the ASLD." This comment is to clarify that APS anticipates making a one-time rental payment to ASLD for the entire lease term, assumed to be perpetual. The total costs presented in Table 4.10-1, which were provided by APS, include this lease payment."	Section 4.10.2.2 was revised to indicate that the payment to ASLD by APS would be lump sum and is included in the ROW acquisition costs in Table 4.10-1.
Richard Stuhan, Siting Consultant Senior, APS	888.71	TRANS	" In Sections 4.12.2.1 and 4.12.3, the analysis suggests a long-term adverse effect on the Thunder Ridge Airpark, and that mitigation would include installing spherical markers and lighting as directed under FAA Advisory Circular AC 70/7460-1K. APS believes that the use of spherical line marker balls would not be required and requests that the analysis reflect that the use of marker balls would be strictly voluntary. APS has completed an independent review of this analysis with the following assumptions and conclusions. Assumptions: • The closest portion of the proposed 165-foot Above Ground Level (AGL) transmission line, its associated support pole structures, guys and right-of way that are proposed to be in proximity to the Thunder Ridge Airpark would be situated approximately 0.33 miles to the east and would run generally parallel to the Airpark"s single 2,600-foot paved north/south runway and its extended runway centerline. Beginning at a point northeast of the Airpark, the proposed transmission line would transition from a south-to-north direction to a west-to-east direction. • The Airpark is listed as "Private Use" facility that is currently limited to Visual approach and departure operations on Runway 17/35. It is assumed that aeronautical activity at the Airpark is limited to Visual operations that are typically generated by single-and/or light multi-engine propeller-driven general aviation aircraft along the extended Runway 17/35 centerline. Visual operations to and from Runway 17 currently utilize a published standard left-hand Airport Traffic Pattern. Visual operations to and from Runway 35 currently utilize a published nonstandard right-hand Airport Traffic Pattern. The maximum AGL height of the Downwind leg of each Airport Traffic Pattern (left or right) may possibly range from 800 to 1,000 feet. Conclusions: • Visual arrival operations to Runway 17 (from the north to the south) would be executed using a standard left-hand Base-to-Final turn that would be begin well north and east of the portion of the transmission line in proximity to the Airpark. It is assumed that pilots transition from the Base to Final descending approach segments of the Visual approach north of the Airpark at AGL heights ranging from 500 feet to 250 feet. Utilizing a standard 3- degree 1- to 0.75-mile Final approach glide path, Visual approach operations would not be adversely affected by the proximity or height of the transmission line located to the east. When executing Visual departure operations from Runway 17 (from the north to the south), it is assumed that pilots will utilize a standard left-hand climbing Crosswind turn to the east that would most likely be initiated at AGL heights ranging from 500 to 800 feet that would be greater than the proposed 165-foot AGL height of the transmission line and support towers.	Section 4.12.3 was revised per the comment to indicate that APS would use spherical markers and lighting on a strictly voluntary basis.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.71 (Continued)	TRANS	• Visual arrival operations to Runway 35 (from the south to the north) would be executed using a nonstandard right-hand Base-to-Final turn that would begin well east of south-to north portion of the transmission line. It is assumed that when aircraft pilots transition from the Base to Final approach segments directly over the north/south segment of the transmission line, the descending aircraft will be at AGL heights ranging from 500 feet to 250 feet. Utilizing a standard 3-degree 1- to 0.75-mile Final approach glide path, Visual approach operations would not be adversely affected by the proximity or height of the transmission line located to the east. When executing Visual departure operations from Runway 35 (from the south to the north), it is assumed that pilots will utilize a nonstandard right hand climbing Crosswind turn to the east the will begin well north of the west-to-east portion of the transmission line at AGL heights ranging from 500 to 800 feet. • The runway, because it is designated as a “Private Use” facility, does not have FAA prescribed trapezoidal CFR Part 77 Civil Airport Imaginary 20:1 Approach Surfaces that would, if applicable, extend outward and upward from each end of the associated Primary Surface 200 feet beyond of each end of the runway. • The use of spherical line marker balls would not be required, and should be considered strictly voluntary.	
Richard Stuhan, Siting Consultant Senior, APS	888.72	VEG	" With regard to Section 4.13.2.1, pages 4-131 and 4-132, APS will be submitting to the BLM a revised Vegetation Management Program (VMP), which is intended to replace Appendix 2B and will be incorporated in APS" Plan of Development for the Project."	Appendix 2B was replaced with the new Vegetation Management Program, and Section 4.13.2.1 was revised accordingly.
Richard Stuhan, Siting Consultant Senior, APS	888.73	CUL	" In Section 4.18.2, page 4-202, APS requests revising Section 4.18.2 to acknowledge that long term productivity of cultural resources is a possibility. The revised statement could read: “The Project could result in physical destruction of National Register-eligible archaeological sites, which would be short-term use. Although impacts would be mitigated by recovery and preservation of artifacts and information, the long-term productivity of the archaeological record would be reduced because the sites would not be available for future investigations, when research methods and procedures might be improved.”"	Section 4.18.2 was revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.74	CUL	" In Section 4.19.4, page 4-214, APS requests the site count in second paragraph be changed from “up to six to nine sites” to” up to 10 sites…”"	The corridor width inventoried for cultural resources was 400 feet, while the corridor width analyzed in the EIS is 200 feet. The number of sites presented in the EIS are those within the 200 foot wide corridor.
Richard Stuhan, Siting Consultant Senior, APS	888.75	GEN	" In Section 5.5, page 5-8, and in Chapter 6, page 608, APS notes that the title of BLM Manual 8120 is more correctly referred to as Tribal Consultation under Cultural Resource Authorities."	Section 5.5 and Chapter 6 (which is Chapter 7 in the Final EIS) revised per the comment.
Richard Stuhan, Siting Consultant Senior, APS	888.76	CUL	" APS requests the second sentence under Cultural Resources section of Appendix 2A be revised to read: If needed, the Memorandum of Agreement would be on file . . . . Similarly, the use of “Programmatic Agreement” in the parenthetical sentence at the end of the section on page 2A-5 is contradictory. APS request that entire sentence be deleted."	Appendix 2A revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Richard Stuhan, Siting Consultant Senior, APS	888.77	CUL	" The third, fourth, and fifth bullets under Cultural Resources section of Appendix 2A refer to a Monitoring Plan and a Discovery Plan as separate documents, but sixth bullet refers to a Monitoring and Discovery Plan. APS requests that the bullets be revised to read “Monitoring and Discovery Plan” for consistency."	Appendix 2A revised per the comment.
Bob Barrett, Mayor, City of Peoria	889.1	SUP PA	"As we have stated consistently throughout this process, Peoria strongly believes that the transmission line route adopted by the State of Arizona and sought by APS now (as reflected in the APS Application) is the appropriate location for the power lines through and adjacent to Peoria."	Statement of preference.
Bob Barrett, Mayor, City of Peoria	889.2	GEN	"The data compiled and analyzed in the DEIS supports the Proposed Action, which is incorporated, embodied, and reflected in the BLM Preferred Alternative."	The comment does not raise questions about the analysis or provide additional information for consideration.
Bob Barrett, Mayor, City of Peoria	889.3	NEPA	"The DEIS makes clear that Alternative 2, Alternative 3, and the No Action Alternative fail to meet NEPA's statutory standards. All three alternatives merit rejection in the EIS."	The NEPA requires analysis of a reasonable range of alternatives. Section 2.2 explains that “reasonable,” is usually defined as alternatives that are realistic (not speculative), technologically and economically feasible, and that respond to the purpose of and need for the Project. Alternatives 2 and 3 were found to meet these criteria. The NEPA requires analysis of a No Action alternative as a basis to compare the Action Alternatives against.
Bob Barrett, Mayor, City of Peoria	889.4	NEPA	"No other reasonable alternatives exist to be analyzed in the EIS. BLM can proceed expeditiously to complete the EIS based on the alternatives already studied."	Statement of preference.
Bob Barrett, Mayor, City of Peoria	889.5	GEN	"Finally, Peoria would like to summarize the crucial factors that support the conclusion in the DEIS that the Proposed Action is the BLM Preferred Alternative: • The State of Arizona approved the power line route. • Broad community consensus exists for expedited approval of the APS Application. • The power line route complies with all existing plans at the local, county, and state levels.	Statement of opinion.
Bob Barrett, Mayor, City of Peoria	889.6	SOC	"The power lines will provide economic benefits to the region through construction, increased renewable energy transmission, and residential, commercial, and industrial growth (leading to jobs and revenue from fees and taxes)."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential job creation.
Bob Barrett, Mayor, City of Peoria	889.7	LU	"The power line route is entirely within BLM's existing designated Transportation Corridor for the future freeway development of State Route 74, and BLM policies (as well as the City's) support co-location of rights-of-way within designated corridors."	The combined environmental impact of the Proposed Project with development of the transportation corridor is analyzed in Section 4.19 of the EIS.
Bob Barrett, Mayor, City of Peoria	889.8	LU	"In its RMP amendment which culminated in 2008-2009, BLM did not consider designating a utility corridor along State Route 7 4, so this is the first time that BLM has conducted a substantive analysis of such a corridor in this location."	Statement of opinion.
Bob Barrett, Mayor, City of Peoria	889.9	VIS	"The visual impacts of the power line route can be mitigated fully."	Section 4.14.5 indicates that the visual impacts of the transmission line cannot be fully mitigated and that there would be unavoidable adverse impacts to visual resources.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bob Barrett, Mayor, City of Peoria	889.10	LU	"Nearly two-thirds of the entire power line route is on State lands. Placing a portion of the route on BLM lands is consistent and compatible with the national federal energy priority established by the President, Congress, and various federal Departments, including Energy, Homeland Security, and Interior (including specifically BLM) to promote renewable energy development and protection of the nation's energy grid."	Table 1.5-2 lists the federal laws, statutes, regulations, and executive orders with which the Proposed Action and all Action Alternatives must conform.
Bob Barrett, Mayor, City of Peoria	889.11	NEPA	"As explained in the DEIS, Alternatives 2 and 3, as well as the No Action Alternative, each fail to satisfy these above factors."	Table 1.5-2 lists the federal laws, statutes, regulations, and executive orders with which the Proposed Action and all Action Alternatives must conform.
Bob Barrett, Mayor, City of Peoria	889.12	LU	"Page ES-1. The City previously provided comments (4/3/12 and 7/3/12) on the Preliminary Draft EIS ("PDEIS"), in which we explained that we thought the draft failed to acknowledge and address the significance of the Proposed Action route falling entirely within an existing SR74 Transportation Corridor in the RMP. We suggest that the SR74 Transportation Corridor be explained in the opening paragraph of the Executive Summary. At a minimum, it should be explained on page ES-3 in Section ES.3.2, as part of the second paragraph that discusses co-locating transportation and utility corridors."	Comment noted. While the transportation corridor is germane to the EIS analysis, it is not of a level of significance to merit explanation in the opening sentences of the document. Text was added to Section 3.6.3.4 and it was presented in Section 3.12.2.1.
Bob Barrett, Mayor, City of Peoria	889.13	GEN	"Page ES-3. As we noted in our comments on the PDEIS, the draft includes this phrase: "the appropriateness of amending the RMP in such a way that would benefit developers." The City does not understand this phrase in the context of the section and is requesting its removal."	Table 1.8-2 provides a summary of issues from Scoping, which includes the Economic Strategies Workshop. The issue referenced by this comment is that the process of amending the RMP should consider whether or not it is appropriate to amend the RMP in such a way that would benefit developers. This was an issue identified from scoping, thus is included in this specific section. The referenced text is stating the issue as it was raised during scoping.
Bob Barrett, Mayor, City of Peoria	889.14	LU	Page ES-11. As we noted in our comments on the PDEIS, the City is confused by the attempted conclusion in the second paragraph in this Section. The first paragraph discusses BLM lands and concludes: "Because the portion of BLM lands where the land use would be affected by the Proposed Action or any of the Action Alternative routes would be relatively small, overall impacts to BLM-administered land use would be minor, regardless of alternative." The second paragraph discusses all other lands – which includes State Lands and lands owned by many different private parties. Then BLM attempts to conclude: "Because the portion of private and State Trust lands where the land use would be affected by the Proposed Action or any of the Action Alternative routes would be relatively small, overall impacts to land use would be minor, regardless of alternative." This seems to be comparing apples to oranges – BLM as a single landowner as compared all other landowners combined. To be accurate, shouldn't the comparison be to individual landowners, rather than grouping them all together into a single "land use impact"? A single landowner affected by an alternative could well have a major impact on its property. It is far too simplistic and just not accurate to claim that such impacts would be minor. A quick review of the proceedings before the Arizona Power Plant & Line Sitting Committee in 2008, as well as the voluminous information submitted to BLM during Public Scoping and now on the DEIS, will make clear how large the negative impacts would be of Alternatives 2 and 3 on certain individual landowners.	The land use analysis analyzes the impacts to land use rather than impacts to land owners or economic impacts in particular. Impacts to land owners and economics are addressed under socioeconomics in Section 4.10. The NEPA standard of "reasonably foreseeable" applies to cumulative impacts.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bob Barrett, Mayor, City of Peoria	889.14 (Continued)	LU	The NEPA standard is "reasonably forseeable development." The DEIS does not appear to apply this standard. Also, under NEPA "current" is defined as a 0-10-year period. The DEIS does not appear to apply this standard."	
Bob Barrett, Mayor, City of Peoria	889.15	LU	"Page ES-20. The data and analysis in the DEIS supports BLM's conclusion that the Proposed Action should be the Agency Preferred Alternative. However, BLM's proposal to amend the RMP in three respects is not clearly supported. (1) Single-use utility corridor (2) Multi-use utility corridor south of State Route 74. Note that "multi-use utility corridor" is not defined in the Glossary, Section 6.3 (see pages 6-47 and 6- 48). The types of acceptable uses do not appear to be described in the DEIS. Does BLM have any pending applications for use of this land? If not, what uses does BLM envision for this "multi-use utility corridor"? (3) VRM classification change from III to IV	BLM finds that the RMP requires amendment to comply with the FLPMA as explained in Section 1.3.2. The definition of multiuse corridor has been added to the Glossary in the EIS.
Bob Barrett, Mayor, City of Peoria	889.16	GEN	"Page 1-1. Statement in the middle of the second full paragraph that the transmission lines would be on "mostly non-public lands" is incorrect. Please correct to read "mostly public lands."""	Table 4.6-2 indicates that out of the approximate 38 miles in length of the Proposed Action, approximately 4.4 miles would cross private property and 24.7 miles would cross State Trust lands. The State does not consider trust lands to be public lands in the sense the BLM-managed federal lands are public lands.
Bob Barrett, Mayor, City of Peoria	889.17	GEN	"Page 1-2. As we noted in our comments on the PDEIS, we are not sure whether the intent is to relate this sentence ("In addition, the . . .) to the prior sentence ("The Director . . ."). Is the intent to state that the Director's dismissal of the protest letter to Peoria in February of 2009 included reference to the 2009 Record of Decision (ROD)? We do not recall such a reference. Also, we are not sure why this sentence about the 2009 ROD is included, but it appears that the draft omits any reference to the March 2003 letter from APS to BLM in which APS identified SR 74 as a "Preliminary Utility Corridor.""	There is no relationship between the last sentence of the referenced paragraph under Section 1.1.2 ("In addition…) and the City of Peoria's protest, or the director's dismissal of the protest. The sentence provides additional information about the ROD.
Bob Barrett, Mayor, City of Peoria	889.18	LU	"Page 2-36 and 2-37. The description of the Vistancia and Lake Pleasant Heights master-planned developments as being "proposed" does not adequately describe the zoning entitlement for the properties. Both developments have full zoning entitlements and executed Development Agreements with the City of Peoria."	In terms of route overview and screening in Section 2.7.4.3, the technical status of the master planned developments is incidental and does not affect the outcome of the screening. Section 2.7.4.3 was revised to eliminate the term proposed and now reads, "including the Vistancia (final plat) and Lake Pleasant Heights (preliminary platting stage) developments." Sections 3.10 and 4.10 (as appropriate) have been revised to clarify the status of the developments, to indicate that they are in various stages of planning for development.
Bob Barrett, Mayor, City of Peoria	889.19	SOC	"Page 2-71. Under "Socioeconomics and Environmental Justice, Effects Common to All Action Alternatives – Social Values, Population and Housing," the statement is: "No effect on housing in the Study Area expected." This appears to be inconsistent with other descriptions in the DEIS of planned residential development that is "reasonably foreseeable" in this area (for example, Pages 4,208, 4-226 and 4-230 and 4- 231). Clearly, Alternatives 2 and 3 will have significant impacts on current and reasonably foreseeable housing. Please correct this inconsistency in the DEIS.	This statement is taken from Table 2.8-1, which summarizes impacts in Chapter 4. This text refers to Section 4.10.2.1, which indicates that construction workers would have no effect on housing. Table 2.8-1 was updated to make this clarification.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bob Barrett, Mayor, City of Peoria	889.20	SOC	"Page 2-72. Under "Socioeconomics and Environmental Justice, Socioeconomics – Market Value Effects, Developed Property Values and Undeveloped Land Values," long statements are made under Alternatives 2 and 3. The City is not clear how BLM is defining the terms "Developed Property" and "Undeveloped Land." In other portions the DEIS describes planned residential development that is "reasonably foreseeable" in this area (for example, Pages 4-208, 4-226 and 4-230 and 4-231). Why then is this reasonably foreseeable development not included as "Developed Property" for purposes of the analysis summarized in this Table? None of these terms appear to be defined in the Glossary (Sec. 6.3). Also, the statements in this portion seem limited to impacts only within the 200-feet of the actual power line right-of-way, although other portions of the DEIS acknowledge both direct and indirect effects/impacts (those terms are defined in the Glossary). This inconsistency is confusing and should be resolved."	Section 4.10.1.1 contains the first reference to the terms "Developed Property" and "Undeveloped Land" and that section has been revised to contain definitions for these terms as they are used in the analysis. The terms have also been added to the glossary in Section 6.3. The NEPA standard of "reasonably foreseeable" applies to cumulative impacts. The master planned communities are not present in the existing condition. Any impacts of the transmission line on the communities would be cumulative as additional development (other impacts) would be required before the communities would be affected. Section 4.10 has been revised in response to this and other comments to clarify impacts to properties that would adjoin the proposed ROW rather than within 200 feet.
Bob Barrett, Mayor, City of Peoria	889.21	SOC	"Page 2-72. Under "Socioeconomics and Environmental Justice, Socioeconomics – Market Value Effects, Property Taxes," the statement under Alternatives 2 and 3 is: "New tax revenues would be the same as P.A." This is incorrect. If the power lines were constructed within Alt. 2, the City of Peoria's Saddleback Heights Planned Community District would need to be amended to reflect the direct and indirect impacts caused by the lines, resulting in fewer homes, which would cause the amount of property tax collected to decrease. Likewise, if the lines were constructed within Alt. 3, both the City's Saddleback Heights PCD, Lake Pleasant Heights PCD and Vistancia PCD would need to be amended, resulting in a significantly larger decrease in property taxes collected.	The effects described in this comment are cumulative effects, as another action (construction of the community) would have to occur in order for the outcome to occur. Cumulative impacts to Socioeconomics are addressed in Section 4.19.11; however, this section has been revised to include impact to tax revenue.
Bob Barrett, Mayor, City of Peoria	889.22	LU	"Page 2-76. In Linear KOP for Alternative 2, it incorrectly indicates conformance to the Peoria General Plan. The General Plan Land Use Map illustrates the proposed action. A corridor south of SR-74 is not compliant with the General Plan."	Text in Table 2.8-1 under the heading of the Linear KOP does not reference the General Plan.
Bob Barrett, Mayor, City of Peoria	889.23	LU	"Page 2-76. Under "Visual Resources, Complies with Town of Buckeye and City of Peoria General Plan," Alt. 2 is answered "Yes." This is incorrect. The correct answer is "No – City of Peoria." Alt. 2 does not comply with the Peoria General Plan. The Proposed Action complies with the Peoria General Plan."	Table 2.8-1 and Section 4.14 revised per the comment.
Bob Barrett, Mayor, City of Peoria	889.24	GEN	"Page 3-55. The heading to this Section is "Future Planned Land Use" but then the first words under the heading read "Future and planned land uses." (emphasis added). "Future" is not defined in the Glossary (Sec. 6.3). Isn't "current" defined under NEPA as within 0-10 years? Why is "future" used in the DEIS to describe any activity occurring after the day the sentence is written? We recommend removing the word "future" in this Section."	The first sentence after the heading 3.6.3.4 was edited to remove the word "and." NEPA does not define the term "current." Generally speaking, direct impacts are analyzed considering the existing conditions present at the time of analysis. Impacts to future land use (land use in a general, not specific sense) are considered an indirect effect as they occur at a different time. Impacts to specific future land uses, such as master planned communities, are cumulative impacts, as the communities themselves have to be developed before there is an impact.
Bob Barrett, Mayor, City of Peoria	889.25	GEN	"Page 3-55. The listed and existing 'Estates at Lakeside' entitlement and planned community was amended in January/2013 and is now known as 'Cholla Hills' and should be reflected accordingly on all exhibits."	Changes were made document-wide to address the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bob Barrett, Mayor, City of Peoria	889.26	OREC	"Page 3-90. In the introductory paragraphs of this Section, the EIS should make clear that any recreation activities that would occur within the Proposed Action area also would be occurring within the existing SR-74 Transportation Corridor. By designating the Transportation Corridor in its RMP Amendments acknowledged that the State of Arizona plans to develop SR-74 into a ten-lane freeway. This fact is addressed repeatedly in the DEIS (for example, Pages 4-223, 4-224, 4-227, 4-229 (referred to as "reasonably forseeable"), and 4-232). It will help a reader understand the impacts described later in the DEIS if the Transportation Corridor is noted in this Section."	While the RMP designates a transportation corridor on BLM-managed public lands in the referenced area along SR 74, the corridor designation itself does not change the existing land use. Additional environmental analysis (in compliance with NEPA) would be required prior to any future transportation development; therefore, changes to recreation are not necessarily a foregone conclusion just because the RMP designated a transportation corridor. Designation of a transportation corridor simply means the RMP envisions the possibility of that use in that area, and future proposals for development of transportation in that area would not require an RMP amendment.
Bob Barrett, Mayor, City of Peoria	889.27	OHV	"Page 3-94 thru 3-97. In the introductory paragraphs of this Section, the EIS should make clear that any OHV recreation activities that would occur within the Proposed Action area also would be occurring within the existing SR-74 Transportation Corridor. By designating the Transportation Corridor in its RMP Amendments acknowledged that the State of Arizona plans to develop SR-74 into a ten-lane freeway. This fact is addressed repeatedly in the DEIS (for example, Pages 4-223, 4-224, 4-227, 4-229 (referred to as "reasonably forseeable"), and 4-232). It will help a reader understand the impacts described later in the DEIS if the Transportation Corridor is noted in this Section."	While the RMP designates a transportation corridor on BLM-managed public lands in the referenced area along SR 74, the corridor designation itself does not change the existing land use. Additional environmental analysis (in compliance with NEPA) would be required prior to any future transportation development; therefore, changes to recreation are not necessarily a foregone conclusion just because the RMP designated a transportation corridor. Designation of a transportation corridor simply means the RMP envisions the possibility of that use in that area, and future proposals for development of transportation in that area would not require an RMP amendment.
Bob Barrett, Mayor, City of Peoria	889.28	LU	"Page 3-124. In the "SR74" section of this Table, the DEIS describes the dramatic increase in traffic that will occur as SR-74 is developed as a ten-lane freeway. An increase in average daily traffic trips from just over 5,000 to well over 25,000 (500%) projected for 2031 is certainly significant. Many other Sections of the DEIS seem to be written without this important fact in mind. Repeated use of terms such as "rural" to describe the area fail to acknowledge and consider that this area is about to become urbanized. A gentleman who provided oral public comments at the Phoenix public meeting on December 13, 2012 understood this perfectly, as he described how electric lines that were constructed in one-time "rural" Peoria now blend into what is now a fully "urban" environment. At most, the BLM lands north of SR-74 may remain "rural," but the area immediately surrounding SR-74 and most everything south of that area is in the process of becoming urban. Or, as stated in Section 4.19.2 on page 4-208 of the DEIS, "urban development is encroaching." This, as some portions of the DEIS make clear, is a "reasonably foreseeable" fact. It would help the analysis provided in the DEIS if this fact was used consistently through all portions of the document."	The last column on the right in Table 3.12-1, 2031 projected average daily trips, and text referencing future transportation projects in the paragraph following the table were removed. The same information is provided, and cumulative effects are appropriately analyzed in Section 4.19.13.
Bob Barrett, Mayor, City of Peoria	889.29	TRANS	"Page 3-125. The language is inconsistent with other portions of the DEIS when it refers to the "potential" development of the SR-74 freeway. For example, on Page 4-229 the freeway is identified as "reasonably foreseeable." The text and Figure 3.12-1 refer to the future regional highways in the study area. However, the future Phase 4 extension of Loop 303 to the north is not shown. This project includes extending SR74 due east along the Joy Ranch Road alignment – immediately east of the study area."	Text referencing future transportation projects in the paragraph following Table 3.12-1 was removed. The same information is provided, and cumulative effects are appropriately analyzed in Section 4.19.13. Figure 3.12-1 was not intended to show future transportation projects.
Bob Barrett, Mayor, City of Peoria	889.30	VIS	"Page 3-148. Linear KOP description at top of page, 2nd line: Peoria does not believe that it is correct to identify the portion of SR74 in the study area as has having "recognized scenic values". This implies the area may have some formal scenic designation, which is incorrect. Peoria recommends removing "recognized" from the sentence."	The referenced text was revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bob Barrett, Mayor, City of Peoria	889.31	VIS	"Page 3-185. Peoria is concerned about the use of KOP 15 as it is located of the lower end of an approach to a bridge over the CAP. The view point to the north is partially obscured by the fill material for the approach. A better view point would have been at the CAP canal or towards the northern boundary of the Vistancia development."	At the time of the analysis, the location of KOP 15 represented the views of the northernmost residences of Vistancia.
Bob Barrett, Mayor, City of Peoria	889.32	GEN	"Page 3-161. We are not sure why the statement "Since the 1960's, treated effluent from metropolitan Phoenix has been delivered through some canals" needs to be included. Peoria is not aware of any irrigation canals in the study area that are delivering treated effluent and would recommend removing this sentence."	The referenced text was deleted per the comment.
Bob Barrett, Mayor, City of Peoria	889.33	LU	"Page 4-3 and 4-4. Peoria is not clear as to the purpose of this Section concerning the "Draft RMPA." What is the "Draft" that is being referred to? The language then describes that the RMP "may be amended" and follows with three options. None of the options acknowledges the existing SR-74 Transportation Corridor. None of the options identifies the potential conversion of the Transportation Corridor into a Multi-Use Corridor. Why do the "options" fail to include the use of a Multi-Use Corridor? As Peoria has pointed out to BLM in the past, Map 9, the "Utility & Transportation Corridors and Communications Sites" map in the RMP only identifies "Multi-use Corridors" and "Transportation Corridors." "Single-use utility corridors" and "multiuse utility corridors" are not identified. The Multi-use Corridor identified on RMP Map 9 for the electric transmission lines on BLM lands that parallel portions of I-17 north of Phoenix seems to be a pretty close model for the Proposed Action along SR-74. Peoria does not understand why it is not identified as a potential option. As Peoria previously noted in its May 25, 2011 public scoping comments: "In one of the confusing aspects of the RMP, BLM stated in its presentation during the public scoping meetings that the RMP does not include any utility only corridor designations (as opposed to" transportation only" corridors). However, BLM also stated that there is a "utility corridor" along the CAP canal. When BLM pointed out this "utility corridor" on a map, the key to the map only identified "multi-use corridors" and "transportation corridors." The term "utility corridor" does not appear anywhere on the BLM map."	Section 4.1.3 is reiterating the decisions that the BLM needs to make, as outlined in Table 1.5-1. The process the BLM goes through to amend an RMP involves issuing a "draft" amendment, which is in conjunction with a draft EIS. At the final EIS stage, the RMP amendment would be "proposed", and the Record of Decision contains the final RMP amendment decision. The designation of the transportation corridor along SR 74 in the RMP is irrelevant to the analysis of a utility or multiuse corridor. While the RMP designates a transportation corridor on BLM-managed public lands in the referenced area along SR 74, the corridor designation itself does not change the existing land use. Additional environmental analysis (in compliance with NEPA) would be required prior to any future transportation development. Designation of a transportation corridor simply means the RMP envisions the possibility of that use in that area, and future proposals for development of transportation in that area would not require an RMP amendment. Alternative 1 analyzed in the EIS contains provision for designation of a multiuse corridor that would take in the existing transportation corridor, and as described in Section 2.5.1, would allow for co-location of future utilities. The fact that the RMP does not reference utility corridors does not prohibit the BLM from consideration of or establishing a single-use utility corridor in conjunction with appropriate NEPA analysis.
Bob Barrett, Mayor, City of Peoria	889.34	OREC	"Page 4-78 and 4-79. This section should also point out the long-term recreation access north of SR74 will be limited in the future when the roadway is turned into a 10-lane freeway."	While the RMP designates a transportation corridor on BLM-managed public lands in the referenced area along SR 74, the corridor designation itself does not change the existing land use. Additional environmental analysis (in compliance with NEPA) would be required prior to any future transportation development; therefore, changes to recreation are not necessarily a foregone conclusion just because the RMP designated a transportation corridor. Designation of a transportation corridor simply means the RMP envisions the possibility of that use in that area, and future proposals for development of transportation in that area would not require an RMP amendment.
Bob Barrett, Mayor, City of Peoria	889.35	OREC	"Page 4-78 and 4-79. Following the completion of powerlines, the recreation areas could also be impacted by future development of private or State Trust Lands located north of SR74."	Section 4.19.10 analyzes the cumulative impacts to recreation from the transmission line in conjunction with reasonably foreseeable projects, including development of surrounding lands.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bob Barrett, Mayor, City of Peoria	889.36	OREC	" BLM must consider the evaluation of Recreational Impacts relative to the City of Peoria approved General Plan. As represented in the City of Peoria's voter approved General Plan, the recreational uses south of SR 74 would be severely impacted by the placement of the power line south of SR 74 due to the highly integrated natural land uses on the south side of SR 74 involving schools, parks, commercial, residential and open space. By comparison, the relative recreational impact of locating the power line north of SR 74 would be much less than the location of the power lines south of SR 74."	Section 4.19.10 analyzes the cumulative impacts to recreation from the transmission line in conjunction with reasonably foreseeable projects, including development of recreational resources south of SR 74.
Bob Barrett, Mayor, City of Peoria	889.37	LU	"Page 4-96. The City is not clear how BLM is defining the term "Affected Acreage" for purposes of this Table. The amounts listed for Saddleback Heights seem limited to impacts only within the 200-feet of the actual power line right-of-way, although other portions of the DEIS acknowledge both direct and indirect effects/impacts (for example, Pages 4- 230 and 4-231). This inconsistency is confusing and should be resolved."	Table 4.10-3 is now Table 4.10-4, and has been revised to distinguish between the acreages within and outside the ROW, and within 200 feet of the transmission line. As a result of additions to the literature review, Sections 3.10 and 4.10 now clarify that impacts to property values can occur for private property adjoining the ROW; however, the EIS continues to quantify a range of impacts to private property within 200 feet of the transmission line, per findings of the literature review.
Bob Barrett, Mayor, City of Peoria	889.38	SOC	"Page 4-97. The statement that the annual property tax revenue generated by private properties crossed by the Proposed Action is $289,151 appears to Peoria to be far too low. Does this number include the "reasonably foreseeable" development discussed elsewhere in the DEIS?"	The impact analysis in Section 4.10.2.2 is analyzing the impact to the affected environment described in Chapter 3. The effects described in this comment are cumulative effects, as another action (construction of the community) would have to occur in order for the outcome (higher tax revenue) to occur. Cumulative impacts to Socioeconomics are addressed in Section 4.19.11; however, this section has been revised to include impacts to tax revenue.
Bob Barrett, Mayor, City of Peoria	889.39	OREC	"Page 4-99 and 100. As Peoria noted in an earlier comment, this Section on "Effects on Recreation" should make clear that any recreation activities that would occur within the Proposed Action area also would be occurring within the existing SR- 74 Transportation Corridor. By designating the Transportation Corridor in its RMP Amendments acknowledged that the State of Arizona plans to develop SR-74 into a ten-lane freeway. This fact is addressed repeatedly in the DEIS (for example, Pages 4-223, 4-224, 4- 227, 4-229 (referred to as "reasonably forseeable"), and 4- 232)."	While the RMP designates a transportation corridor on BLM-managed public lands in the referenced area along SR 74, the corridor designation itself does not change the existing land use. Additional environmental analysis (in compliance with NEPA) would be required prior to any future transportation development; therefore, changes to recreation are not necessarily a foregone conclusion just because the RMP designated a transportation corridor. Designation of a transportation corridor simply means the RMP envisions the possibility of that use in that area, and future proposals for development of transportation in that area would not require an RMP amendment.
Bob Barrett, Mayor, City of Peoria	889.40	VIS	"Page 4-101. The note that area residents, commuters and recreationists have "rural scenic expectation" of SR74, does not take into account that ADOT is planned to turn this into a 10-lane freeway."	The impact analysis contained in Section 4.10 analyzes the impacts to the affected environment described in Chapter 3. Expansion of SR 74 is a reasonably foreseeable project, which is analyzed in conjunction with other projects in Section 4.19, Cumulative Impacts.
Bob Barrett, Mayor, City of Peoria	889.41	LU	"Page 4-103. If the power lines were constructed within Alt. 2, the City of Peoria's Saddleback Heights Planned Community District would need to be amended to reflect the direct and indirect impacts caused by the lines, resulting in fewer homes, which would reduce property values and cause the amount of property tax collected to decrease."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue. The impact analysis in Section 4.10.2.2 is analyzing the impact to the affected environment described in Chapter 3. The effects described in this comment are cumulative effects, as another action (construction of the community) would have to occur in order for the outcome (higher tax revenue) to occur. Cumulative impacts to Socioeconomics are addressed in Section 4.19.11; however, this section has been revised to include impacts to tax revenue.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bob Barrett, Mayor, City of Peoria	889.42	LU	"Page 4-106 thru 4-108. Likewise, if the lines were constructed within Alt. 3, both the City's Saddleback Heights PCD, Vistancia PCD and Lake Pleasant Heights PCD would need to be amended, resulting in a significantly larger decrease in property values and property taxes collected. The "Affected Acreage" in the Table is way too low, when considering both indirect and direct impacts/effects (as considered in other portions of the DEIS – for example, Pages 4-226 and 4- 230 and 4-231)."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue. The impact analysis in Section 4.10.2.2 is analyzing the impact to the affected environment described in Chapter 3. The effects described in this comment are cumulative effects, as another action (construction of the community) would have to occur in order for the outcome (higher tax revenue) to occur. Cumulative impacts to Socioeconomics are addressed in Section 4.19.11; however, this section has been revised to include impacts to tax revenue.
Bob Barrett, Mayor, City of Peoria	889.43	LU	"Page 4-125. It should be described here that in a December 7, 2010 letter Arizona Department of Transportation Deputy State Engineer Robert Samour stated to BLM that "the Department does not see any conflicts with the placement of this line adjacent to our future right-of-way easement needs as identified in the ADOT SR 74 Feasibility Report, Right-of- Way Preservation."	Inclusion of the ADOT comments is appropriate. Impacts of the transmission line on the future widening of SR 74 would be indirect impacts. The text of Section 4.12 was revised per the comment.
Bob Barrett, Mayor, City of Peoria	889.44	LU	"Page 4-137. The first full paragraph, discussing Maricopa County's "scenic corridors." Please add the following two sentences to provide more complete information: "Maricopa County has stated in writing that it is not opposed to the State-certificated route contained in the APS Application. In addition, evidence introduced at the State line siting hearings, including the "Maricopa County State Route 74 Scenic Corridor Guidelines" and the "Maricopa County Zoning Ordinance, Chapter 10, Section 1009, Hwy 74 Scenic Corridor," made clear that even within the County scenic corridor, high-voltage transmission lines are contemplated and authorized." Peoria previously provided to BLM both documents cited in the above sentence."	The referenced text is describing the methodology used for visual analysis; the recommended text is not appropriate in this section. Section 3.14.1 contains the suggested information. Upon further review it was determined that neither the Proposed Action nor any of the Action Alternatives would place the transmission line within the SR 74 scenic corridor outside the jurisdiction of the City of Peoria. This was also clarified in Section 4.14.2.1.
Bob Barrett, Mayor, City of Peoria	889.45	VIS	"Page 4-162. Peoria is concerned about the use of KOP 15 as it is located of the lower end of a approach to a bridge over the CAP. The view point to the north is partially obscured by the fill material for the approach. A better view point would have been at the CAP canal or towards the northern boundary of the Vistancia development."	At the time of the analysis, the location of KOP 15 represented the views of the northernmost residences of Vistancia.
Bob Barrett, Mayor, City of Peoria	889.46	OHV	"Page 4-203. While new access road for the power lines could lead to an increase in user-defined OHV trails, this section seems overly negative. It would seem that BLM and the OHV users could work together to revise the managed trail system north of SR74 to account for the disturbance. The DEIS and related public process has the appearance of an undue emphasis on recreational uses over other factors required by law to be considered. One example of this is the legal-size, two-sided project flyer handout provided by BLM at the public comment meetings -- why is "The Boulders Staging Area" the only non-project item identified on the first-page map? It makes no sense to identify it by name but omit the existing Transportation Corridor, the future freeway corridor along State Route 74, the reasonably forseeable master-planned Peoria developments in the vicinity, etc. (Peoria contrasts this with Figure 3.9-1, a map of "Recreation Opportunity Spectrum" which seems to appropriately identify the location of the "Boulders OHV Staging Area")."	The existing conditions of the BLM-managed lands north of SR 74 is that the area is maintained focusing on OHV recreation. The majority of the area is managed under the ROS class Semi-Primitive Motorized (Figure 3.9-1). The addition of the transmission line to this environment has the potential to significantly impact the existing recreational use and experience, and the BLM's management of the area. With regard to the flyer handout, the Boulders Staging Area is an existing improvement on BLM-managed public lands north of SR 74 that facilitates OHV use of the area that would potentially be affected. The suggested addition of the reasonably foreseeable master-planned communities would not be appropriate as they are not part of the existing condition.
Bob Barrett, Mayor, City of Peoria	889.47	GEN	"Page 4-208. In this Section, the DEIS succinctly summarizes what is discussed in some other portions of the document – that the residential, commercial, transportation and other development in the Project Area is "reasonably foreseeable." This conclusion, as noted in other Comments from Peoria herein, should be consistently applied throughout the DEIS."	The title of Section 4.19 is Cumulative Impacts. The referenced text on page 4-208 is under the heading of 4.19.2, Past, Present, and Reasonably Foreseeable Actions. These actions, in conjunction with the proposed transmission line would lead to cumulative impacts. Discussion of cumulative impacts under Direct and Indirect impacts in other areas of the EIS would be inappropriate.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bob Barrett, Mayor, City of Peoria	889.48	TRANS	"Page 4--210. As Peoria noted in our comments on the PDEIS, prior to the discussion of the Maricopa County "scenic guidelines," BLM should explain that because SR 74 is a State highway, the State of Arizona could have designated it as a State Scenic Road under State law. State highways all across Arizona have been designated as "State Scenic Roads." In its comments to BLM during the public scoping period in May of 2011, the City attached the then-current "Arizona Scenic Roads & Federal Lands" map produced by the Arizona Department of Transportation. The Scenic Roads map also is available on the ADOT website. SR 74 is not (and never has been) designated as a "State Scenic Road." In fact, a witness testified at the Arizona Line Siting hearing that she inquired with ADOT about SR 74, and ADOT informed her that a member of the public in the past had submitted a request to designate SR 74 as a State Scenic Road and after review the State determined that the road was not worthy of such a designation. These facts should be included and emphasized in this section, prior to any mention of the Maricopa County documents."	The fact that the State could have designated SR 74 a State Scenic Road is not relevant to the analysis in the EIS. SR 74 was designated as a Maricopa County Scenic Highway, but as stated in the EIS, according to the City of Peoria, the SR 74 Scenic Corridor within their jurisdiction does not apply.
Bob Barrett, Mayor, City of Peoria	889.49	LU	"Page 4-216. In the final paragraph on page 4-216, a correct reference is made to the City of Peoria 2010 General Plan. The DEIS will be more accurate and comprehensive if it also includes the specific land use plans adopted by the Peoria City Council as Planned Community Districts for Vistancia, Saddleback Heights, and Lake Pleasant Heights. Peoria previously provided the three PCD's to BLM in Peoria's May 25, 2011 public scoping comments.	Community development for the communities of Vistancia, Saddleback Heights, and Lake Pleasant Heights are referenced in Appendix 4B, which provides brief descriptions of the past, present, and reasonably foreseeable projects in the cumulative impact areas.
Bob Barrett, Mayor, City of Peoria	889.50	GEN	"Page 4-217. The listed and existing 'Estates at Lakeside' entitlement and planned community was amended in January/2013 and is now known as 'Cholla Hills' and should be reflected accordingly throughout the document."	The revision recommended by the comment was implemented document-wide.
Bob Barrett, Mayor, City of Peoria	889.51	GEN	"Page 4-217 and 4-218. Throughout this Section the DEIS discusses the reasonably forseeable developments by writing each sentence to read that the development "would" do certain things ("change," "transform," "include," etc.). To accurately reflect the conclusion that each development is reasonably foreseeable, the sentences will be more accurate if "would" is changed" to "will" in each case."	The EIS consistently refers to any future actions' impact as "would" document-wide as this is the proper analysis for a NEPA document as the future actions are not guaranteed to occur.
Bob Barrett, Mayor, City of Peoria	889.52	LU	"App 4B. Under City of Peoria "Community Development", various projects are identified – some within and outside the Study Area. West Wing Mountain is specifically emphasized (outside Study Area) as a project that includes the dedication of hillside areas for open space. It would be more relevant to emphasize Saddleback Hts, Lake Pleasant Hts and Vistancia as fully-entitled projects that include specific requirements for public open space dedication. Also, as noted herein, just a reminder that 'Estates at Lakeside' is now 'Cholla Hills.'"	The developments listed in Appendix 4B are all within the various Cumulative Impact Areas, but not all are necessarily within the 2-mile Buffer Cumulative impact Area. Therefore, no developments were removed from Appendix 4B. References to the "Estates at Lakeside" have been revised to "Cholla Hills."
Bob Barrett, Mayor, City of Peoria	889.53	GEN	"App 4B. Saddleback Heights location descriptor should be just "City of Peoria" as it is wholly within the city boundaries. Additionally, project type should be planned community or some other descriptor that recognizes it is not just housing but other land uses including commercial, mixed-use and employment. Also, acreage is 5,296."	Appendix 4B was revised per the comment.
Bob Barrett, Mayor, City of Peoria	889.54	GEN	"App 4B. Under Vistancia, remove "(aka Entrada) There is no other recognized name for Vistancia. Entrada is simply one of many subdivisions within Vistancia."	Appendix 4B was revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bob Barrett, Mayor, City of Peoria	889.55	GEN	"App 4B. Need to include row(s) and descriptors for the Lake Pleasant Heights and Cholla Hills (formerly Estates at Lakeside) master-planned communities. Peoria Staff will provide copies of these plans."	Appendix 4B was revised per the comment.
Bob Barrett, Mayor, City of Peoria	889.56	GEN	"App 4B. As we noted in our comments on the PDEIS, under "Brief Description," in the second paragraph, second and third sentences, statements are made concerning Maricopa County's "scenic overlay." As explained in the comment for Page 4-210 above, facts concerning the State's decision to not designate SR 74 as a "State Scenic Road" should be included and emphasized in this section, prior to any mention of the Maricopa County overlay."	The fact that the State could have designated SR 74 a State Scenic Road is not relevant to the analysis in the EIS.
Bob Barrett, Mayor, City of Peoria	889.57	LU	"Figure 1. Peoria does not believe that it is relevant to the analysis in the DEIS to include the Maricopa County "Scenic Corridor" designation which lies outside of the land sought by APS in the Proposed Action. It also is irrelevant because highvoltage electric transmission lines, such as those in this project, are authorized within the Maricopa County Scenic Corridor. We recommend deleting the "Scenic Corridor" on the Project Location Map. If BLM insists on including it, then at a minimum the key on the map should clarify that it is a "Maricopa County Scenic Corridor." It is important to be consistent with other terms used in the map key, which identify the "ACC Certificated Corridor" and the "BLM Transportation Corridor." As currently written, the map key is inconsistent."	The comment correctly points out that no portion of the proposed project would be within the Maricopa County SR 74 scenic corridor. The scenic corridor was removed from all EIS maps and added to Figure 3.14-4, as the scenic corridors are discussed in conjunction with visual resources.
Bob Barrett, Mayor, City of Peoria	889.58	TRANS	" It would be useful to show the planned regional Arterial roadway network within the limits of the study area on Figure 3.12-1."	Figure 3.12-1 shows the existing roadway system as discussed in Chapter 3, Affected Environment, which discusses the existing conditions in the Study Area.
Bob Barrett, Mayor, City of Peoria	889.59	GEN	"App 4B. Brief Description, add " Peoria has a Municipal Planning area of approximately 233 square miles and a population of 154,065 (2010 Census)""	Appendix 4B was revised per the comment, except the citation was revised to City of Peoria 2013.
Bob Barrett, Mayor, City of Peoria	889.60	GEN	"App 4B. Please revise the description for the Quintero development to include that it is entitled for 283 dwelling units and covers 828 acres."	Appendix 4B was revised per the comment.
Bob Barrett, Mayor, City of Peoria	889.61	GEN	"App 4B. Pleas add "Westland Park" to the list of park sites. The site contains 2 shaded playgrounds, basketball court, 2 ramadas and multi-purpose turf area. The site is 5 acres."	Appendix 4B was revised per the comment.
Bob Barrett, Mayor, City of Peoria	889.62	GEN	"Figure 3.6-2. Future Planned Land Use map The map does not correctly reflect Peoria's currently adopted Land Use plan, The land plan for Saddleback Heights was changed in December 2011. The land plan for Lake Pleasant Heights was changed in December 2012, The Estate at Lakeside development was changed to 'Cholla Hills" in January 2013 to and expanded to include an additional 244 acre parcel to the northwest of the original development."	Figure 3.6-2 was revised per the comment.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bob Barrett, Mayor, City of Peoria	889.63	GEN	"Figure 3.6-3. The information for "Existing Mines Sites" is confusing. It appears to include both currently active mines, existing mining claims with no activity and historic mining sites/claims. Peoria recently updated our land use map (Per SB1598) to include all of the currently recognized permitted (per Office of State Mining Inspector) mines. It is recommended that this data be displayed and identified with more clarity."	The information in question that was used for this Figure is from a reliable source. After some additional research and investigation on the data used, it was determined that updating the suggested data specifically for the City of Peoria was unnecessary to appropriately analyze the impacts to mining sites in the project area.
Bob Barrett, Mayor, City of Peoria	889.64	WTR	"Figure 3.15-2. Groundwater Resources map This map des not currently identify the "Municipal Water service Area for Peoria. It also appears to incorrectly identify the Phoenix Municipal Water service Area as extending south of SR74 to the Morgan Substation, which is inside Peoria's city limits. Peoria will provide a current map of water service areas."	Figure 3.15-2 was revised per the comment.
Dr. Jack S. Tuber	915		Not a comment letter (his comment letter is 267)	
Dale & Sheryll Chicoine	929.1	SUP PA	"We wish to register our support for the proposed APS power lines north of SR74."	Statement of preference.
Ron & Barb Guagenti	951.1	OPP ALT3	" From an aesthetic / visual perspective ... UNsightly transmission powerlines on Carefree Highway will actually be visible from our development, and from many parts of the Vistancia community, and we find this totally unacceptable;"	Statement of preference. Section 4.14 provides relevant Figures, simulations, and an analysis of impacts to visual resources from various locations in the project area.
Ron & Barb Guagenti	951.2	LU	"Location / Site ... because SR74 is already a designated 'transportation corridor', it would be much more logical to construct this powerline system on the land adjacent to an existing roadway system. Furthermore, because ADOT has scheduled SR74 to be expanded into a 6-lane highway in the near future, APS has the required 1,000 ft. 'right-of-way' property available to install the powerlines adjacent to this aforementioned 'right-of-way'"	Statement of preference. APS has proposed to site the transmission line largely within the transportation corridor on BLM land along SR 74.
Ron & Barb Guagenti	951.3	GEN	"Environmentally ... building a high-powered transmission line through an undisturbed, 'native', & pristine desert ecosystem is illogical, & would be environmentally unreasonable & irresponsible. The alternative proposal will guarantee protection of the native desert for generations to come."	The EIS evaluates the environmental reasonableness of the alternatives considered, as well as those eliminated from detailed analysis, in Chapter 2.
Walter "Skip" Zahlmann	952	UC	Content unrelated to analysis	
Gary Torhjelm, Manager, Group Three Properties and Noranda Properties Inc.	953.1	SUP PA	"We support the approval of the Proposed Action as the Agency Preferred Alternative…"	Statement of preference.
Gary Torhjelm, Manager, Group Three Properties and Noranda Properties Inc.	953.2	OPP ALTS	"We…oppose Alternative 2, Alternative 3 and the Sub Alternative, which place the transmission line in closer proximity to existing and soon-to-be-built and occupied homes."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Gary Torhjelm, Manager, Group Three Properties and Noranda Properties Inc.	953.3	LU	"The Proposed action as the Agency Preferred Alternative is the only route consistent with local governmental plans including the City of Peoria, and is the expectation of the Federal Land Policy and Management Act…"	The comment correctly states that the Proposed Action is the only route consistent with local governmental plans. FLPMA says "…the Secretary shall, to the extent he finds practical, …assure that consideration is given to those State, local, and tribal plans that are germane in the development of land use plans for public lands; assist in resolving, to the extent practical, inconsistencies between Federal and non-Federal Governmental plans…." "Land use plans of the Secretary under this section shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act."
Gary Torhjelm, Manager, Group Three Properties and Noranda Properties Inc.	953.4	LU	"In several instances, the DEIS characterizes Alternative 2 and Alternative 3 south of SR74 in Peoria which goes through private master planned communities as similar to the Preferred Alternative which places the line north of SR74 on BLM land in Peoria and Maricopa County. The DEIS incorrectly characterizing zoned and legally vested land in varying stages of pre-development process as vacant, undeveloped, grazing land. Before a home is constructed within a planned community, there are many phases in the development process, not all viable development activity is visually apparent. There is insufficient or incorrect analysis in Alternative 2 and Alternative 3 in the resource areas of Land, Transportation, Recreation, Visual Resource and Socioeconomics."	Revisions have been made to the EIS indicating that "undeveloped land" is not "raw land" and that developments on private lands are in various stages and generally describing a range of effects to developments.
Gary Torhjelm, Manager, Group Three Properties and Noranda Properties Inc.	953.5	CE	"The National Environmental Policy Act (NEPA) requires the DEIS to analyze the impacts of each alternative on past, present and reasonably foreseeable future actions or development. While the DEIS notes Lake Pleasant Heights as a Reasonably Foreseeable Development within Appendix 4B2 , the DEIS does not analyze the impacts of Alternative 2 and Alternative 3 to future residents of Lake Pleasant Heights, that could occupy homes prior to APS initiating construction of the line. The DEIS should consider future roads as foreseeable developments. Much of this has been excluded from the impact analysis and should be noted. In addition to the height and width associated with the ADOT and MAG future planning for SR743to 6-10 lanes, regional arterials and streets are also planned south of SR74 within the Study Area identified in the DE IS. These future roads will connect master planned communities, create major intersections for commercial development and employment centers and will connect with SR74 from the south, at major interchanges. A map showing the location of these planned roads relative to Alternative 2 and Alternative 3 and the change in traffic patterns and dispersal of trips for these planned street and regional connection roads have been omitted in the DE IS analysis."	The impact of the transmission line on the views of future residents is analyzed in Section 4.19.15. Property value effects are analyzed based on the existing condition in Section 4.10. Any residences constructed between analysis and construction of the transmission line would be with the knowledge of the impending transmission line. Descriptions of future roads as foreseeable projects are contained in Appendix 4B, and analyzed in Section 4.19, Cumulative Impacts.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Gary Torhjelm, Manager, Group Three Properties and Noranda Properties Inc.	953.6	SOC	"The devaluing of land due to transmission lines has been incompletely evaluated. There are two studies provided by the NAHB which were submitted to BLM, but was not included showing Tucson, Arizona; which should be considered a very relevant comparison, with market data resulting in a negative impact of over 25%. This study should be included as additional literature in Appendix 3A. DEIS making home price comparisons of 2005 and 2009 is neither current nor accurate for the Phoenix metro market. The consistent, improving trend, in the housing market is not recognized. Socioeconomic resource impacts will occur through the limitations to master planned community ability to develop. The decreased home values, prolonged timeline of sales and increased carrying costs to develop will have a much more drastic impact, which in some cases may force some property tax revenue, sales tax revenue, construction tax revenue, impacts fees, and other city, state and federal income sources to never come to fruition. On page 4-105, the report states that "the net effect on property tax revenue under Alternative 2 would be beneficial, major and long term. These benefits would accrue to taxing entities and the beneficiaries of those taxes." The increased tax base from the future developments will create a drastic difference between what property tax has been represented as grazing land in Alternative 2 and 3 as compared to the more accurate analysis of primary and secondary property taxes and sales taxes generated from suburban community densities. Homes similar to this area, would, on average, annually contribute approximately $500 to the County, $200 to the State Equalization tax, $100 to the City of Peoria, $1600 to the Peoria Unified School District, $450 to the Community College District, $200 to public services including fire, health care, flood control, and $1400 in bond tax. These taxation revenues would be threatened from both Alternative 2 and Alternative 3, as both effect hundreds to thousands of dwelling units; both by delaying them coming onto the market or having lower assessed valuations. For each home devalued and/or not built, roughly $2000 would be stripped from the educational budget or a total of approximately $4000 per home in general property tax. Using these figures (provided), we believe the analysis of taxation and socioeconomic resources are incorrectly represented. There is a direct correlation between adding residential rooftops and the development of commercial, retail operations. The DEIS does not portray or analyze the basic economics of residential entitlement, predevelopment, development, marketing and home sales. These activities stimulate a local economy, pay for government, provide public community recreation, provide jobs, and should be accounted for within the socioeconomic impact. An analysis of Peoria's or any Phoenix metro city's source of revenue to their general fund, will illustrate the importance of private investment and commercial and residential development to the economy. While the DE IS is significantly detailed about the economic contributions of off highway vehicle recreation and grazing allotments; the economic contributions created by construction of community infrastructure associated with master planned communities and homes, as well as employment and revenues associated with the sale of goods and services during home construction and occupancy have been ignored in the DEIS socioeconomic analysis.	The referenced studies were reviewed and deemed not applicable to the analysis of impacts to private property values. Home values are not used for any impact analysis in Section 4.10. Changes in the real estate market would not change the impact of the transmission line on home values. Regardless of the present value of any property, the addition of the transmission line would affect the value of the property on a percentage basis, as described in the cited source contained in the literature review in Appendix 3A. The effect of potentially inhibiting development because of the value of the property/homes being reduced by the presence of the transmission line would be an indirect effect and is addressed in Section 4.10, as applicable. The potential impact on taxes would be a cumulative impacts issue, and Section 4.19.11 is revised, as applicable. The detail provided in the EIS analysis of socioeconomic impacts of OHV recreation attempts to describe the current contributions of OHV recreation to the local economy, and the impact the transmission line would have on that economic driver. The comment is suggesting that the transmission line would inhibit anticipated future economic drivers, which is a type of analysis, and is now addressed in Section 4.19.11 as appropriate.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Gary Torhjelm, Manager, Group Three Properties and Noranda Properties Inc.	953.7	VIS	"The DEIS states that the impacts to visual resources in Alternative 2 and Alternative 3 would result in a contrast that would be weak and the long term impact would be negligible. These conclusions are not based on a proper analysis required through Key Observation Points guidelines, such that Key Observation Points (KOPs) should first identify residential viewers, including those in reasonably foreseeable developments."	Impacts on the views of reasonably foreseeable developments are contained in Section 4.19.15.
Herman and Kathleen Burgess	954.1	OPP SAR	"One of the proposed routes from this transmission line is to go down Cloud Road. The information I was made aware of puts one of the main towers basically in my backyard. Obviously this is not what a property owner wants to see out his backdoor. We are not people who are against the progress and growth of our community, but there are acres and acres of land that can be used for this project that will not infringe on current homeowners rights."	Statement of preference.
Herman and Kathleen Burgess	954.2	PH	"we as a group need to do a better job in communicating to the property owners in the area of the projected routes. I found out about the Cloud Road Proposal from a neighbor who went to a meeting at a school based on a small sign that was posted on a road. We did not get any prior notification, nor had any of my neighbors."	Chapter 1 contains a detailed description of the public outreach and hearing process conducted for this project.
Dan Gainor	955.1	SUP PA	"I am writing to express my support of the proposed alternative to high power transmission lines running through native desert of Trilogy at Vistancia and having the lines placed on the north side of State Route 74."	Statement of preference.
Dan Gainor	955.2	GEN	"Building high power transmission lines through native desert is not environmentally responsible."	The EIS evaluates the environmental reasonableness of the alternatives considered, as well as those eliminated from detailed analysis, in Chapter 2.
Lydia Alzo	957.1	SUP UR	" I am in support of the APS lines."	Statement of preference.
Walter "Skip" Zahlmann	958	UC	Content unrelated to analysis	
Paulette Miller	959.1	SUP PA	"Preferred Alternative location for the APS lines along the north side of SR 74."	Statement of preference.
Krisitina Jauch	960.1	OPP FL	"I'm distressed that the BLM is considering violating the trust of the public by desecrating public land with APS transmission towers. As a concerned citizen, I support the ongoing campaign for keeping these ugly towers off of pristine desert lands. A few of my concerns are: 1. Improper notification of Wittmann, Circle City, Morristown and surrounding residents. 2. Continued refusal to provide Freedom of Information requests. 3. Decrease of property values throughout the areas (up to 50%). 4. Unnecessary disruption of Endangered Species. 5. Conservation of pristine BLM land."	Statement of preference. The EIS provides a complete analysis of most of the concerns: 1. Notification of Wittmann, Circle City, Morristown and surrounding residents is addressed in Section 5.2. 2. Addressing Freedom of Information Act requests is beyond the scope of the EIS. 3. Impacts to property values are addressed in Section 4.10 4. Impacts to endangered species are addressed in Section 4.16. 5. The BLM's mission is explained in Section 1.5.2, and impacts to land use on BLM-managed public land are addressed in Section 4.6.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Ramon A. Gaanderse, Executive Director, Tucson Utility Contractors Association	961.1	SUP PA	"…we are writing in support of the BLM's selection of APS' Proposed Action/ Electric Transmission ROW Application as the BLM Agency Preferred Alternative in the DEIS. Amendments to BLM's Bradshaw Harquahala Resource Management Plan which support co-location of utility rights-of-way in designated corridors are appropriate."	Statement of preference.
Ramon A. Gaanderse, Executive Director, Tucson Utility Contractors Association	961.2	LU	"TUCA's opinion is that both the public and private utility providers are faced with the challenge of obtaining rights-of-way. The majority of lands in Arizona are held by government agencies which need water, sewer, electricity, natural gas, communication, rail, and transportation utilities. Any action which facilitates and expedites right-of- way approval on public land; federal, state or local increases timely and efficient utility service delivery."	Statement of opinion and agreement that rights-of-way need to be obtained.
Ramon A. Gaanderse, Executive Director, Tucson Utility Contractors Association	961.3	LU	"A shared corridor with adjacent transportation and utility ROW is an industry standard…"	Statement of preference.
James E Jaenicke	964.1	SAAA	" … I now support Alternative 2 where the transmission lines stay on the south side of SR 74 instead of Alternative 1. The additional cost it takes to cross over SR 74 twice and use BLM lands is not prudent or efficient construction and seems just plain silly. It seems there may be ulterior motives for Alternative 1 such as a developer (Sunland) protesting the southern Alternative 2 route."	Statement of preference.
James E Jaenicke	964.2	VIS	" In either Alternative 1 or Alternative 2 the developers residential buildings will see the transmission lines. I recommend and support Alternative 2 as the best overall solution!"	Statement of preference.
Walter "Skip" Zahlmann	996	UC	Content unrelated to analysis	
Karen Savage, Transportation Planning Manager City of Surprise	997.1	GEN	"At this time the city does not have any objections to the Preferred Alternative described in the document. The document appears to address issues raised earlier in this process by the City of Surprise."	Statement of preference.
Joe Carmin	999.1	NEPA	"I am very concerned about the process of selecting a route for this proposed line and how it seems to be dictated by land development corporations. It seems to me that the people in charge of selecting this route are listening to these corporations promoting future development instead of the people with homes in already established residential areas"	Section 2.10 provides the rationale for the Agency Preferred Alternative and Chapter 1 provides the background and processes that have been followed for this project.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Joe Carmin	999.2	OPP SAR	"Also, I am adamantly opposed to the sub-alternative route that is proposed down Cloud Road. Why does this line have to go so close to an established residential area when there is almost three miles of undeveloped state trust land that is between Highway 74 and Cloud Road? I also don't see how APS and the state of Arizona can ruin our lives and property to save a few dollars in the possibility of developing their land sometime in the future."	Statement of preference.
Emily & Andrew Walkerwicz	1000.1	SUP PA	"My husband and I want to convey our sincere hope that the power lines will be placed on the North side of SR74."	Statement of preference.
David Thompson	1002.1	SUP PA	"I support the Preferred Alternative location on the north side of SR 74. I support it because of the visual impact, because SR 74 is already a designated transportation corridor, for environmental reasons and because several entities (ADOT, Maricopa County, City of Peoria, etc.) support it as well."	Statement of preference.
Merl Schafer Daisy Anderson	1008		Not a comment letter, but rather the info letter for the Petition.	
Ray Prendergast	1024.1	NEPA	"Does your proposal include as an option to NOT PROCEDE until more conservation measures have been studied?"	Recommended mitigation measures are contained in Section 2.9 with added mitigation now included in the EIS, and under specific resources in Chapter 4 and a list of BMPs for the project are provided in Appendix 2A.
Ray Prendergast	1024.2	VIS	"One such option would be to make the usual glossy, ungainly white towers (we see everywhere across Arizona) somehow be made more harmonious with the landscape, This might be to study how best the towers should be placed to preserve the views, and to make sure their color preserves one of Arizona's prime views."	Mitigation for impacts to visual resources is contained in Section 2.9.13 and 4.14.4.
Sierra Club on behalf of David Ravenscraft	1032		See Letter 116 – Added: "Siting this line on our public lands north of SR74 is not in the best interests of the public and does not support the mission of the Bureau of Land Management (BLM). Instead, it primarily benefits one developer, while sacrificing important public resources."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Leisa Brug, Director, Governor's Office of Energy Policy	1049.1	SUP PA	"We are grateful that you elected to participate in this line siting process, and, in the end, endorsed the preferred route selected by the committee after much consideration and compromise."	Statement of preference.
Bonnie Carmin	1051.1	OPP FL	" I am writing to you because I am upset about the BLM thinking about giving the APS right of way for a transmission line across our federal desert lands."	Statement of preference.
Bonnie Carmin	1051.2	OPP SAR	"I didn't realize how this would affect us until after the public meetings were held when we found out that a large development corporation had input as to where it should go and that APS had created a new alternative route that would be only less than 200 feet from our back yard along Cloud Road."	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Bonnie Carmin	1051.3	NEPA	"I am hoping that the BLM can halt this proposed line until more input from citizens can be heard and more thought can be put into this process. So many people are upset because it will affect their property values on land that is already an established residential area. Please have the BLM reconsider this proposal or at least delay it until you have heard other ideas."	Section 4.10 provides the Socioeconomic impacts analysis. Chapter 1 provides a description of the processes that BLM has followed for this project. The FEIS addresses and/or responds to the comments received on the DEIS.
Bradley Reithmann	1070.1	PH&S	"When we moved to Vistancia, I made a new friend named Jagger. When Jagger was born his family lived in Phoenix and were living under power lines. When Jagger was two years old he got leukemia. The doctor told his parents the power lines are why he got sick. So his family moved here so they could get away from the power lines. When they found out that APS might put power lines here, they moved again. I miss Jagger very much and wish he never got sick. I don't want this to happen to any other kids especially my friends. Please put these power lines as far away from children as you can."	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.
Christopher and Connie Ecker	1190.1	SUP PA	"…I…commend the Bureau of Land Management's choice for alternative #1…all…have deemed placement along the north side of SR74 as the most logical choice and the one that will least impact all concerned considerations."	Statement of preference.
Doug Reithmann	1191.1	SUP PA	"I respectfully request that you revise your Resource Management Plan to allow placement of the APS 500/250kV power distribution lines on the north side of SR 74."	Statement of preference.
Doug Reithmann	1191.2	WLF	"Should BLM officials reject alignment along the north side of SR 74, APS will have no choice but to place the power distribution lines along the "Carefree Highway alignment" which literally draws an imaginary line from the southern most section of the Carefree Highway extending across pristine desert land. This land is home to coyote, bobcats, javalina, roadrunners, wild donkey, quail, rabbits, squirrels, desert tortoise. These populations will be dramatically affected by the power lines and placement of a roadway in order for APS to perform maintenance and repairs. We must protect all wildlife."	Impacts to wildlife and associated habitat (including sensitive species and their habitat), along with mitigation measures to minimize impacts, are both analyzed and described in Section 4.16.
Lynda Reithmann	1192.1	SUP PA	"we are actively supporting the proposed alternative to place the APS 500/250kV power distribution lines along the north side of SR 74…"	Statement of preference.
Lynda Reithmann	1192.2	OPP ALTS	"we…strongly reject placement along any other route closer to current and future residential communities."	Statement of preference.
Lynda Reithmann	1192.3	PH&S	"A report by the United States National Council on Radiation Protection stated, "There is a powerful body of impressive evidence showing that even low exposure to electromagnetic radiation has a long-term effect on health." Some effects listed in the report include sudden infant death syndrome, childhood leukemia, changes in brain chemistry which can lead to Alzheimer's Disease, impairment of the immune system and inhibition of melatonin production which suppresses certain cancers, including prostate and breast cancers. Considering the 500kV power distribution lines are the most powerful in existence, these statements are quite alarming. Further, they reported that the "only protection from electromagnetic fields is distance from the source."	Impacts to Public Health and Safety from all alternatives are analyzed in Section 4.7.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Lynda Reithmann	1192.4	SOC	"I can site many areas in Arizona where property values are less for homes under power lines than homes that are not. One example is Sun City Grand, where homes east of the 303 sell for approximately $20,000 more than homes on the west side of the 303 that are in sight of the power lines. Plummeting property values due to poor economic conditions have devastated thousands of families in the Valley of the Sun through short sales, foreclosures and bankruptcy. Placement of the APS 500/230kV power lines anywhere but on the north side ofSR 74 will further the devastating effect oflower property values for Vistancia, Trilogy and Blackstone residents. The viability of cities is greatly based on tax revenue coffers that provide essential services to local residents. Just as residential homes are affected, the city coffers will be dramatically lowered through lesser tax revenues. There is no doubt that homes located near power lines have a lower property value. Through the domino effect, schools will be negatively impacted as budget cuts, due to lower tax revenues, are inevitable. Our schools have already suffered severe budget cuts and can't afford to lose more funding."	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue (which fund local school systems).
Lynda Reithmann	1192.5	VIS	"Power lines along a transportation corridor affects scenic views on a part-time basis; power lines along family communities affects scenic views 100% of the time. APS representative, Mike De Witt, stated during a Q&A session at the Kiva Club in Trilogy that the power lines could be placed in front of, behind or on TOP of the beautiful mountain scenery that frames our community. The fact is, SR 74 is not designated a scenic corridor in Arizona."	The impact of the proposed transmission line on visual resources, and specifically the visual resources of SR 74, is analyzed in Section 4.14.
Tom Reithmann	1193.1	SOC	"Should the APS power lines encroach on our Vistancia community, home values will be adversely affected on a permanent basis. Lower home values = lower tax revenues = even less funding for schools. Why is it that the actions of adults are so often detrimental to our children?"	Socioeconomic impacts of all alternatives are analyzed in Section 4.10, including potential impacts to property values and tax revenue.
Tom Reithmann	1193.2	SUP PA	"Please revise your Resource Management Plan to enable placement of the APS 500/250kV power lines along the north side of SR 74."	Statement of preference.
Brent & Rose Dubberstein	1204.1	SUP PA	"My wife and I are in support of the PROPOSED ALTERNATIVE which is on the north side of State Route 74."	Statement of preference.
CHANGE.ORG	1229		Not a comment letter, but a letter from CHANGE.ORG stating that a petition had been started by Merl Schafer.	
Sierra Club on behalf of Ann Wagner	1235		See Letter 116 – Replaced first paragraph with: "Please do not cave to pressure from one individual: your mission is to serve the public interest, not to help someone increase their private wealth."	Chapter 1 in Section 1.3.2 has been revised to clarify the BLM's multiple use mandate under the FLPMA and provide information on the BLM's mission, which provides context for the BLM's purpose and need.
Jeff Gursh, AZOHVC and ATR	1276.1	SAAA	"…this overview of our support of Alternate 3 the Carefree alignment."	Statement of preference.
Jeff Gursh, AZOHVC and ATR	1276.2	OPP PA	"We cannot support your Proposed Action/ Preferred Alternative. A power line corridor in this area on BLM lands North of Hwy. 74 is a direct and major long term impact to recreation…"	Statement of preference.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.3	LU	"APS and the city of Peoria appeals were turned down three separate times filed AFTER end of comment period and after the Signed 2010 EIS. Finally, APS and ACC put enough pressure on the BLM that we are now looking at revising a less than 2 year old EIS to accommodate Agencies that did not plan ahead."	Chapter 1 provides a detailed description of the background information for this project and Section 2.10 provides the rationale for the Agency Preferred Alternative.
Jeff Gursh, AZOHVC and ATR	1276.4	OPP ALT1	"AZOHVC and ATR do not support alternate 1, expansion of APS corridor on BLM lands north of Hwy74."	Statement of preference.
Jeff Gursh, AZOHVC and ATR	1276.5	SAAA	"Alternate 2 move corridor /ROW to south side of HWY 74 This option would be our 2 choice but believe that Alternate 3 the Carefree alignment would be the least impact overall. We would support this alternate over PROPOSED ACTION."	Statement of preference.
Jeff Gursh, AZOHVC and ATR	1276.6	SAAA	"…we support alternative 3, the Carefree Hwy alignment. This alternate, from the data given, is the least impact to BLM lands and majority of concerns listed."	Statement of preference.
Jeff Gursh, AZOHVC and ATR	1276.7	GEN	"Page 32-34 ES.3.2 Issues - Issue 1: AII the issues noted here can be addressed with the corridor located south of HWY 7 4. The existing APS corridors and substations south were the original intended locations and are a much better fit considering the future plans for the areas North of Hwy 74 by both the City of Peoria and the Maricopa county Parks. Both agencies plan on creating open space preserves and trails systems to join BLM routes and Maricopa County Parks is looking at resorts and other amenities just east of Castle Hot Springs road near Lake Pleasant because of the beauty of the area north of 74 and the undisturbed view shed."	Section 2.10 provides the rationale for the Agency Preferred Alternative.
Jeff Gursh, AZOHVC and ATR	1276.8	GEN	"Issue 2: COST, APS, if preferred alt is chosen, should have to pay for any and all expenses that the BLM would incur to amend the existing EIS RMP for the North side of Hwy 74. This would include but not be limited to: EIS/RMP amendment, NEPA for APS project mitigation, NEPA and clearances to rehab area, NEPA and clearances to rebuild/relocate trail systems, Mitigation of T and E species such as Tortoise, relocation of all high value plants including Saguaros and trees to other BLM areas that would benefit from replanting , this would mean that Topping Saguaros and clear-cutting would NOT be an acceptable method to protect corridor under lines, see AZOHVC costs at end of this document for more specific costs including a breakdown of costs to control dust , trespass and law enforcement needs to enforce no cross country travel in corridor."	APS is responsible for the cost of the EIS process. The EIS specifies mitigation that APS would be responsible for; some mitigation sections in the DEIS have been revised and/or expanded in the FEIS. No trails would be required to be rebuilt/relocated; see additional subsequent comment responses. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.
Jeff Gursh, AZOHVC and ATR	1276.9	LU	"Issue 3: Transmission lines placed in existing corridors and near existing sub stations that are currently in or near subdivisions should be considered. These areas were developed around the APS corridors and residents purchased their homes knowing that these corridors were there as well as that future lines and corridors were in the planning. Your EIS data shows that public expect to see this type of utility structures in this Carefree Hwy urban area corridor setting. Please look at corridors south of Hwy 74. This would greatly reduce the cost and impacts to both environment and recreation planning that \already has been signed off on and paid for."	The EIS evaluates route alternatives to the Proposed Action/Preferred Alternative, including the Carefree Highway alignment under Alternative 3.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.10	AIR	"Issue 4: Air quality will be an issue with the corridor long after construction is completed. Similar corridors in other public lands (FS see accompanying AZOHVC document)) show issues with wind blow dust events , trespass, cross country travel and erosion damage due to the continuing clear cutting under the towers long after construction. This must be considered especially on the north side for 74 due to the greater density of vegetation and designated Multiuse /OHV recreation that will be in this area. Your data shows problems with trying to keep OHV and trespassers out of ROW and off centerline road. This could easily result in closure to all OHV due to dust and resource damage if unchecked. The other issue will be allowing other non-motorized recreation access to the closed to OHV groups. Whatever reasons ROW is closed to OHV should also apply to any other recreation."	Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions.
Jeff Gursh, AZOHVC and ATR	1276.11	OREC	"Issue 5: The current approved, BLM 201 0 RMP/EIS, address managed, responsible recreation and resource management, to imply that because the area already has grazing and Multiuse/ OHV use, that APS impact would be similar, is unacceptable. Impacts according to your data show it to be a moderate to major impact (page 462) previously impacted OHV and multiuse recreational areas show major long term impacts from the Corridors and centerline roads left after construction. ANY impact from recreation or grazing was seriously considered and needed mitigations were put in place by BLM for the acceptance of the 2010 EIS /RMP. There was no consideration of an APS corridor in the planning for good reason . The clear cutting and removal of trees, vegetation and topping of Saguaros will cause future problems with Water shed that would deal with the following: Silt moving into wash areas creating windblown dust issues, and the same silt affecting wildlife and water supplies. Both these issues will be greater on the North side due to the proximity to the "head water" drainage from mountain areas. The initial removal of the plant life during construction and clear cutting under wires is not a short term issue. This process will continue thru the life of the tower system. This long term clear cutting will continue to be an issue that must be funded by APS."	The EIS contains a revised and updated Appendix 2B, APS' Transmission Vegetation Management Program. Sections 3.9 and 4.9 of the FEIS reflect changes to the affected environment description and impacts analysis. Additional clarification has been added to the FEIS in Appendix 2A to specify how saguaros would be handled.
Jeff Gursh, AZOHVC and ATR	1276.12	VEG	"Issue 6: Dense vegetation on North side and remote areas that will be difficult to access to fight fires is another issue North of HWY 74 that is not as big an issue the farther south you move."	The issue of Fire is discussed and addressed in Sections 3.7.3 and 4.7.1.3.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.13	OHV	"Issue 7: Recreation: The Boulders SRMA area is one of the most popular OHV areas in the State. The public spent years working with the BLM to find a way to protect the area while allowing responsible OHV and other types of recreation to use the area. Terrain and vegetation are used to keep recreation on designated trails. Corridors such as this one have caused tremendous long term damage to recreation systems in other locations such as the Prescott Forest and the Tonto Forest. These impacts include soil erosion due to clear cutting under towers and lines, new access to areas that would have otherwise been inaccessible, loss of trails due to opening canyons and washes to equip to build, loss of vegetation that restricted users to specific trails and access to the now created new roads to build system of towers and lines. With the closure to OHV thru out the entire Row, including the 4.5 mile section North of Hwy 74, Single track users will be directly affected. The access roads and centerline The cost to rebuild .. relocate or otherwise mitigate these issues is very high, but the long term cost or the continued clear cutting and the cost to the BLM to pay for long term rehab and law enforcement to reduce the impacts form the new corridor cannot be ignored. A single officer is more than $100,000 a year plus his equipment to use to patrol areas that his Truck or car cannot access. This is a major expense that the BLM should not have to incur and should be included in any mitigation that would be put in place to address the RECREATION issue."	The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions. Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity and no loss of single-track trails. Recreation mitigation in Section 4.9 was expanded to include monitoring of the centerline by APS and patrolling of the ROW by BLM, enforcing the designation of the centerline as an Administrative route.
Jeff Gursh, AZOHVC and ATR	1276.14	SOC	"Issue 8: As we presented in the 2011 comment period, Re creation is a huge part of the Arizona economic fabric. The Boulders OHV area is one of the most popular OHV areas in the State. There are a large number of OHV related businesses that have developed in the near by Cities and communities that bring in much needed revenue to the county as well as the State. These also have thousands of employees. Horse back riding out fitters , mountain bikers and related businesses, hikers, rock hounds and many more recreations also enjoy the area. Both the City of Peoria and Maricopa county parks are looking to increase the use of this area north of hwy 74 in the form of preserves and parks with these areas tie back to the BLM trail systems. Corridors such as this have forced agencies to close large areas to recreation due to the damage from cross country travel and the incursions into sensitive areas that the corridor access roads and construction created. This would greatly impact the use and the socioeconomic value of the area. Though many may argue this point, a large percentage of residents in the Area of concern for this project are OHVer that bought their homes in the area to be near the OHV recreation the Boulders SRMA provides. The impact to this area by accepting preferred alternative will be significant."	As demonstrated by the expanded mitigation measures in Section 4.9 and BLM's preference for a single-use utility corridor north of SR 74, BLM strongly supports continued responsible recreation use of the areas accessed from the Boulders Staging Area. Implementation of expanded mitigation measures contained in Section 4.9 would minimize adverse impacts to recreation on BLM-managed public lands north of SR 74.
Jeff Gursh, AZOHVC and ATR	1276.15	SOC	"Issue 9: The proposed section on BLM Lands that is north of Hwy 7 4 will be greatly impacted by P .A. as noted previously. There are no homes affected in alternate 2 for the south side of HWY 74 section to avoid the BLM SRMA and other recreation/ preserve areas. Please look at existing homes that would be impacted rather than what future resident that would have moved into the corridor area knowingly. The residential areas South in Alternate 2 and 3, already have multiple corridors as well as existing substations and smaller utility line corridors ... the visual effects are already an existing impact to these area were adjusted for in existing corridor home values. The south side of the hwy is still the least impact to both enviroment and public recreation resources and fits ,according to your data, in an urban area setting."	Chapter 4 analyzes impacts of the proposed project on the Affected Environment, as described in Chapter 3. The comment correctly notes that homes do not currently exist in the planned development areas south of SR 74 where Alternatives 2 and 3 would cross. However, the NEPA does require the analysis of cumulative impacts. The EIS analyzes the cumulative impacts of the proposed project in conjunction with other past, present, and reasonably foreseeable projects (including planned community development) in Section 4.19.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.16	OREC	"Page 42 ES.6.8 Recreation - Long term issues have not been shown, these include new access roads and clear cutting that will allow other types of recreation not currently allowed, to access remote single track trails or completely eliminate single track by removing the limiting terrain or vegetation. This will become a long term issue with the loss of single track in area. Another issue is that these are the long distance connector trails that allow Single trackers to loop back to trails in north and west of SRMA. Though you show as only a small percentage of the total, they are major corridors that allow access to other BLM areas. In addition, there is no mention of the loss of all access to trails or routes that currently have to access area thru ROW. The ROW and centerline road are closed to all OHV use. This cuts all travel from LP5 end east to mile marker 18. APS should cover the cost of NEPA and the cost to do an additional Amendment to add /replace these important routes outside the corridor area if PREFERED ALTERNATIVE is chosen."	The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions. Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails. Recreation mitigation in Section 4.9 was expanded to include monitoring of the centerline by APS and patrolling of the ROW by BLM, enforcing the designation of the centerline as an administrative route.
Jeff Gursh, AZOHVC and ATR	1276.17	SOC	"Page 42 ES.6.9 Socioeconomic - Property values are always a big concern, private property owners should be compensated for the perceived loss of value or known loss due to project. Currently, there are no homes just south of HWY 74 alternate 2 that would be affected but the private land would be. This land has steep terrain on it that is not suitable for building. This terrain runs from MM18 to the Quintero golf course area (south side lands) Much of the land south in Alternate 2 would not drop in value based on the inability to build on. AS for the misconception that this would be a short term effect on the OHV and other multiuse recreation ..... we would beg to differ. Other recreation areas have been greatly impacted to the point of routes and areas being closed due to similar corridors (please seen AZOHVC comments for details and photos) Everything from the purchase of new OHV and recreation equipment (bikes, horse tack ect) and indirect multipliers such as gas, groceries, campers as well as hotel and restaurant revenue would drop if areas closed or were adversely affected. AZOHVC has supplied and will supply again, economic impact studies for OHV and other local business letters that show direct cause and effect of loss or impact to these recreations. Please consider these in your decision."	Impacts to private property south of SR 74 that would be affected by Alternatives 2 and 3 were determined based on existing conditions for direct and indirect impacts; and based on plans for future development for cumulative impacts. As demonstrated by the expanded mitigation measures in Section 4.9 and BLM's preference for a single-use utility corridor north of SR 74, BLM strongly supports continued responsible recreation use of the areas accessed from the Boulders Staging Area. Implementation of expanded mitigation measures contained in Section 4.9 would minimize adverse impacts to, and prevent use that could lead to closure of the area to recreation on BLM-managed public lands north of SR 74.
Jeff Gursh, AZOHVC and ATR	1276.18	AR	"Page 44 ES.6.11 Transportation - Yes, some roads do exist to access work areas. Few if any exist to access tower locations. These were pointed out to both BLM and contractors for APS that access would be in narrow side drainage and wash areas that would not be able to be put back to their natural state after widening ... . ie single track. The habitat and wildlife will have major Impacts and areas that had not had access to in the past will directly affect resources and wildlife. Also of great concern is the fact that ROW and centerline road will be closed to OHV users. This will close all access from the LP5 area trails and the Boulders OHV area east. This closes long distance looped trails that make the Boulders OHV area so popular with Single trackers. This is a much larger percentage of trails lost than you show. Long term mitigation funds should be put aside for BLM to protect areas affected by these "temporary roads"."	BLM will work with APS to prepare a Construction Access Plan, which will definitively identify construction access routes to assure that there would be no loss of single-track trail, as indicated in the EIS. This Plan would be part of the Plan of Development document.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.19	AR	""Construction Access roads outside the ROW." This is an important point. This would mean that a permanent road along the ROW would remain. The ROW and centerline road would be closed to OHV use which will close access to this area from Boulders OHV area LP5. Also, it is noted that existing trails or roads would be utilized to access ROW road and tower work. This is in contradiction to the page166 2.9.8 No single track would be used as access to work or ROW or lost for that matter{see pg. 462)."	BLM will work with APS to prepare a Construction Access Plan, which will definitively identify construction access routes to assure that there would be no loss of single-track trail, as indicated in the EIS. Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions. Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails.
Jeff Gursh, AZOHVC and ATR	1276.20	VEG	"ES.6.12 Vegetation - Short term and temporary seem to be the norm for all comments ..... long term maintenance is not mentioned. Long term maintenance includes the practice of clear cutting and topping of trees and Saguaros. This ongoing long term maintenance will continue to directly affect populations of Saguaros, trees and wildlife due to this maintenance practice. As mentioned before, both the Tonto National Forest Cave Creek district and Prescott National Forest areas where the clear cutting and topping are practiced, are greatly affecting recreation, plant life, water shed and erosion issues. This must be addressed in EIS. Another issue is the destruction of valuable plants. Rather than topping Saguaros or removing trees thru excessive trimming or crushing ..... we ask that APS relocate boxed trees and Saguaros to areas identified by BLM in other areas that need plants to rehab damage from users, construction and commercial use. This would save valuable plants that would otherwise be lost. The long term practice of topping should be discouraged. A trust fund from APS should be started to address the damage and help BLM mitigate the issues that will be associated with this P.A."	The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.
Jeff Gursh, AZOHVC and ATR	1276.21	VIS	"ES.6.13 Visual - From any ridge line trail, hillside or staging area North of hwy 74, the predominate feature would be the power lines. From any view looking west from Lake Pleasant proposed resorts and recreation areas the towers will impact a large % and be the predominate feature. Anyone accessing the Quintero golf course would find the Line the predominate feature. Our last meeting with the City of Peoria showed proposals to incorporate the north area into a preserve plan ..... that would be greatly affected by the preferred alternative. We ask again that alternative 3 be chosen to reduce impacts to what will become an irreplaceable recreation area. In addition the practice of clear cutting and topping greatly impact the visual resource by creating unnatural look to any plant in ROW area. See attached ROW corridor impacts."	The impact of the proposed transmission line on visual resources is analyzed in Section 4.14.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.22	WTR	"ES.6.14 Water - Though again you show a temporary use of an amazing amount of water to control dust and settle construction, the long term maintenance is not mentioned. Each time the area is clear cut and topped, top soils will be disturbed and windblown dust issues will arise. What will the additional use of water cost and where will it come from? {Which you do not currently address in other areas during these operations). This is a long term affect that must be address as the valley grows and the need for power is a concern ... so is the need for water!"	According to APS, long-term maintenance activities are very minor and infrequent. Undisturbed desert surfaces maintain a crust that does not require repeated application of water. Post-construction use of access roads is described as minimal. Disturbed unpaved roads and vacant areas would be maintained as required by Maricopa County Rule 310.01.
Jeff Gursh, AZOHVC and ATR	1276.23	WTR	"If water for project is sourced from area well owner, this amount of water would greatly affect all other well owners and drop the water table for rancher and other livestock concerns. Please refrain from tapping ground water."	Any water obtained from a private source by APS would already have the approvals and permitted allocations associated with the water right and the amount of water that is allowed to be used.
Jeff Gursh, AZOHVC and ATR	1276.24	SSS	"ES.6.15 Wildlife - A running issue with recreation is the mitigation of the loss or possible loss of habitat for sensitive species. Tortoise habitat is on the top of the list. BLM rule of thumb has been for each mile of route to open, 3 miles of route has to be closed. SINCE APS cannot take and close existing routes to allow this 3 to one formula, a dollar value should be placed on the amount of habitat lost and the possible damage to the population in the area. the costs for relocating or replacing habitat is extremely high and should be factored into the cost effectiveness of having the corridor on this section of BLM north of hwy 74. In addition to the construction damage and loss of that habitat thru disturbance, the roads and access routes as well as the clear cutting area under the entire corridor will be a permanent scar. This loss of habitat is of high value and will not recover due to future maintenance under lines. Long term costs to mitigate this damage will need to be put in place funded by APS. Further, these routes for access during construction and the elimination of terrain and vegetation to restrict access from public will further damage area. The long term costs to enforce rules to protect these areas will be needed and funded by APS for BLM LEO and ranger work, possibly a trust?"	Section 4.16.3.1 specifies mitigation for impacts to Sonoran Desert Tortoise, which includes potential compensation for habitat loss.
Jeff Gursh, AZOHVC and ATR	1276.25	GEN	"ES.8 - WE would prefer alternate 3 as the preferred alternative due to zero impact to existing SRMA and BLM EIS. Should the preferred alternative be chosen, please include in a APS funded trust, but not limit to, the long term costs for rehab, dust control, law enforcement, and the following: Cost of EIS or EA to rebuild trails system, cost to redo and amend original EIS and do new EIS for corridor, cost to do long term Law Enforcement, Cost of all NEPA, and required surveys to mitigate trail construction and monitor and enforce closures into the clear cut areas under the lines. Also it should be included that APS would compensate BLM for the loss of Tortoise Habitat and as mention at a rate of 3 to one (1 mile opened or disturbed, 3 miles replaced) APS corridor would be approx. 5 miles x .5 miles which equals an area value to replace habitat at 15 miles x 1 1/2 miles. It is hard to put a dollar figure on replacing a living eco system, that would need to be worked out with BLM staff."	Statement of preference. APS is responsible for the cost of the EIS process. The EIS specifies mitigation that APS would be responsible for; some mitigation sections in the DEIS have been revised and/or expanded in the FEIS. No trails would be required to be rebuilt/relocated; see additional subsequent comment responses. Recreation mitigation in Section 4.9 was expanded to include monitoring of the centerline by APS and patrolling of the ROW by BLM, enforcing the designation of the centerline as an administrative route.
Jeff Gursh, AZOHVC and ATR	1276.26	NEPA	"ES10 - To comment on the 980 pages of data and make meaningful comments during the Xmas holidays is an impossible task for the public. Even at a non-holiday time frame 90 days to read and comment on this much is something the average person just won't do. This make the public side of the NEPA process sadly lacking form the public comment side. It is unfortunate that this important project time line fell in the holiday period for comments."	Statement of opinion. Comment noted.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.27	GEN	"1.1.1 PAGE 55 - the EIS or RMP amendment cost , though most likely done in house , will still cost the the Federal government and that cost should be passed onto APS as a condition to any one of the alternative accepted."	APS is responsible for the cost of the EIS process, including time spent by federal employees and contractors.
Jeff Gursh, AZOHVC and ATR	1276.28	INFO	"1.1.2 PROJECT HISTORY - Where is a copy of this document? It would be valuable for the public to see where APS had plans for this corridor in this report."	Section 1.1.2 has been revised to expand information about the RMP development process, and includes APS' role in the process.
Jeff Gursh, AZOHVC and ATR	1276.29	GEN	"As noted the BLM dismissed Peoria's claim of a corridor missing from original EIS and as one of the many other groups that did bother to work with the BLM to develop this existing EIS and subsequent SRMA ..... it is unfair and a disservice to the public and the NEPA process to "back door" this size and type of change to the existing area EIS. APS and others, if this was that important a corridor, should have known and taken the time to comment on the future needs at least so that it could have been incorporated and the public known up front of this type of change to the BLM landscape. The public has a hard enough time trusting the Federal agencies; this type of change discourages public participation in this NEPA process.	Section 1.1.2 has been revised expand information about the RMP development process, and includes APS' role in the process.
Jeff Gursh, AZOHVC and ATR	1276.30	LU	"PAGE 57 ... . ROD and RMP approval: This again makes it very hard for the public to bother commenting when large corporations can force changes to approved plans. There is no recourse for public who spent their time working on the original EIS for area that did not include a corridor. Again, if this was such an important issue, why was it not brought up at the public meetings for the BLM plans or at the ADOT hwy 74 meetings that will in the future widen 74 to 41ands? Other agencies plan ahead and one would think that APS did the same ..... or did they? The original plans called for future corridors as shown in alternative 3 Along the Carefree hwy alignments."	Section 1.1.2 has been revised to expand the information about the RMP development process, and includes APS' role in the process.
Jeff Gursh, AZOHVC and ATR	1276.31	NEPA	"1.2 Applicant objective - Applicant makes it sound like there are no alternatives to having the corridor on BLM land for the short 5 miles north. A 5 mile long section that forces the amendment of an existing EIS, has the corridor jump twice over a busy hwy and future ten lane project and Affects preservation and recreation areas already completed or in the works. No one argues the need ... just the alignment. Based on data in this DEIS, the P.A. is not the appropriate choice."	Section 1.1.2 has been revised to detail the Arizona Corporation Commission (ACC) process that led to the development of the Proposed Action route. The ACC requires that APS utilize the route they specified.
Jeff Gursh, AZOHVC and ATR	1276.32	GEN	"1.5.1 EIS frame work - Sadly, after 12 years of working on the SRMA area to develop the existing EIS signed plan, it took less than 2 years to decide that the public, who in good faith worked with the BLM, now has to go back to years of meetings and comments so you can allow an agency that did not bother to comment on the original EIS plan. the public can and will feel that no matter what they do or how much time they spend to comment and work with agencies like the BLM ..... .in the end it is a waste of time ..... thus defeating the purpose of the public comment side of the NEPA process ....."	Section 1.1.2 has been revised to expand information about the RMP development process, and includes APS' role in the process.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.33	LU	"1.5.2 Local jurisdictions: Note that the first 3 plans did not specifically limit or restrict but did not support or include corridors. As with APS, the City of Peoria did not bother to comment on or show BLM during the Existing EIS, any interest in a corridor on BLM in this area. City of Surprise, though did not specifically limit or restrict the transmission line corridors, was pragmatic about the location of lines and did comment to BLM on future plans in the surprise area. MAG and ADOT plans are after the signed 2010 EIS and RMP for this BLM area and should have at the least, commented to BLM on possible future corridor needs based on preliminary work on these reports. Alternative 2 or three would seem to be a better fit with the lack of concern from these agencies during original planning process for existing BLM EIS I RMP.	Section 1.1.2 has been revised to expand information about the RMP development process.
Jeff Gursh, AZOHVC and ATR	1276.34	NEPA	"1.8 Scoping Page 72-73 - AZOHVC , with membership of over 5000 and 11 different OHV organizations , OHV business groups , Arizona trail rider Organization and members as well as ASA4WD (2500 members) and somehow only 11 comments were received for recreation? Not all substantive or same comments?"	The text in the second paragraph following the Section 1.8 heading explains the information contained in Table 1.8-1. The heading for the column on the right in Table 1.8-1 has been revised to “Issues Identified” to address this comment.
Jeff Gursh, AZOHVC and ATR	1276.35	LU	"Page 74 Table Issues - In areas where there are currently no power lines or corridors avoid placement near homes .... This should not apply to sites that currently have corridors or substations or both near or in sight of residents, these home owners purchased homes with these utilities in place, the addition of new lines to existing systems or impacted areas should not affect the choice of alternatives for this project."	Comment noted.
Jeff Gursh, AZOHVC and ATR	1276.36	SOC	"This is not addressed. AZOHVC and MC Dealers Assoc. submitted economic impact data and specific OHV store financials to show what area does currently generate. Page 156 chart shows unknown impact. You missed the point and the data. Please look at this data as an important factor in P.A. location."	Section 4.10.2.2, Effects on Recreation, addresses potential adverse effects to socioeconomics associated with recreation in Arizona.
Jeff Gursh, AZOHVC and ATR	1276.37	AR	"2.4.1.3 Access roads page 92 - A permanent 14 foot road along transmission lines will cause extensive resource damage and allow access, no matter how well gated or closed off into areas that have previously been undisturbed. Habitat and resource loss will be extreme. The area in the proposed action on BLM lands is extremely rugged and will require extensive disturbance of ground to build thru canyons and drainage areas. Spur roads will cause additional damage and resource damage. This is another example of issues with land directly under lines and the long term maintenance. Rehabbing and reseed on areas outside the corridor will allow erosion and reduction in habitat permanently. These areas in other APS locations have shown to be prone to cross country travel, dust problem areas and resource damage from easy access to dump. The costs to relocate and rehab to a level to reduce these impacts and the cost to enforce the rules that would be need to protect this area should be passed on to the APS and a fund set up as future mitigation is needed."	Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions. Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails. Recreation mitigation in Section 4.9 was expanded to include monitoring of the centerline by APS and patrolling of the ROW by BLM, enforcing the designation of the centerline as an administrative route.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.38	M&M	"Long term dust abatement would require an enormous amount of water. APS is willing to commit to long term dust management of these roads? The Cost should be included in any funding for EIS with BLM, funded by APS (in a trust) to cover this expense."	According to APS, long-term maintenance activities are very minor and infrequent. Undisturbed desert surfaces maintain a crust that does not require repeated application of water. Post-construction use of access roads is described as minimal. Disturbed unpaved roads and vacant areas will be maintained as required by Maricopa County Rule 310.01.
Jeff Gursh, AZOHVC and ATR	1276.39	GEN	"2.4.1.4 Temporary Use areas This is a huge loss of habitat and Vegetation. Damage from this type of work at each tower in the five mile north Corridor would require the closure of all OHV trails based on the 3 to one habitat formula applied to new OHV routes. How can BLM even consider the loss of this much habitat when combined with the centerline access road to be constructed? Example, the Mile Marker 14 area was rehabbed in 2012 to eliminate social parking and related damage. LP 2 wash had Boulder barriers installed to restrict access to Single track only. Will APS repay BLM for work destroyed with new power line center access road and pull sites?"	Section 4.16.3.1 specifies mitigation for impacts to Sonoran Desert Tortoise, which includes potential compensation for habitat loss.
Jeff Gursh, AZOHVC and ATR	1276.40	VEG	"This plan is for short term, where is the long term plan for centerline road and clear cut under towers? This will be a long term issue since each season clear cut will disturb the ROW area."	The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.
Jeff Gursh, AZOHVC and ATR	1276.41	VEG	"Hay bales, currently, noxious weeds are a big problem, weed free hay for horses has been a requirement on some FS lands for years, will the hay be sterile or weed free to help reduce this issue? OHv are required in some Areas on BLM lands to wash vehicles before use on those lands ..... its that important."	Appendix 2A provides a description of the measures to be implemented for noxious weeds and includes certifying that all straw and/or hay would be weed free.
Jeff Gursh, AZOHVC and ATR	1276.42	VEG	"2.4.2.4 Clearing and grading Page 98 - Construction short term issues are big impacts, "clearing" of any kind including trampling, will leave area bare for years. The big issue from our stand point is the damage from continued long term TOPPING of trees and Saguaros and clearing vegetation under lines. This leaves a very unnatural look and are prone to erosion and dust issues. A trust should be setup to mitigate long term effects for BLM to address."	The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.
Jeff Gursh, AZOHVC and ATR	1276.43	M&M	"Funding from APS to pay for BLM LEO or park rangers should be included in any mitigation funds for long term monitoring and mitigation of damage from construction of this corridor."	Recreation mitigation in Section 4.9 was expanded to include monitoring of the centerline by APS and patrolling of the ROW by BLM, enforcing the designation of the centerline as an administrative route.
Jeff Gursh, AZOHVC and ATR	1276.44	VEG	"Revegetation, we would as that more of the plant materials were salvaged rather than crushed or cut down. High value cacti (such as barrel, hedgehog, ocotillo, Saguaros), trees and scrub, should be boxed or removed in a manner to be used on BLM restoration projects nearby. Mature trees are needed to give wildlife safe havens and all this vegetation can bring back other areas thru rehab. APS should, at their cost, make available 25% or more of the usual destroyed plant material for restoration of other areas. We realize that this is not required now, but the damage to plants thru the current topping and crushing just is not acceptable. As a leader in the valley for conservation ..... this would seem to be a win win situation."	The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.45	AR	"2.4.2.9, Chart 2.4-4 from the chart, under Federal lands, your data shows a total of 44 acres or approx. 26 miles of 14 foot wide road ... BLM requires: for each 1 mile of route opened, 3 miles of routes have to close or the equal to in acreage. That would equal over 79 miles of 14 foot wide road .... to mitigate habitat loss, just to build the centerline road and spurs, this does not include the clear-cut corridor.{BLM Fed lands column) Since you tell us in the EIS that no OHV routes will be closed .... where does the 79 miles come from? If not roads, then there should be a very high monetary cost to replace and mitigate the loss of this much habitat."	Section 4.16.3.1 specifies mitigation for impacts to Sonoran Desert Tortoise, which includes potential compensation for habitat loss.
Jeff Gursh, AZOHVC and ATR	1276.46	M&M	"2.4.3 Operations and Maint. As noted in first section of this EIS, access roads and pads, ground clearing and topping maintenance and road repairs to access roads will make for long term issues with dust, habitat lose and access to areas previously undisturbed by public access. These a major concerns for the protection of resources on BLM lands. The cost to mitigate these issues for long term should be funded by a trust setup to cover these BLM expenses. Please see attached Corridor impacts document ."	Expanded mitigation is provided under specific resource sections in Chapter 4 and summarized in Section 2.9. According to APS, long-term maintenance activities are very minor and infrequent. Undisturbed desert surfaces maintain a crust that does not require repeated application of dust suppressants. Post-construction use of access roads is described as minimal. Disturbed unpaved roads and vacant areas would be maintained as required by Maricopa County Rule 310.01.
Jeff Gursh, AZOHVC and ATR	1276.47	OHV	This section gives APS the right to dictate use on public land in or near corridor. Compatible uses determined by APS would be allowed .... compatible is the key word. This has the potential to close OHV routes if APS feels it could harm or damage their property or safety of lines. That leaves OHV community at APS rules rather than the Federal rules that would apply to the existing area under the RMP or SRMA. Again the public has a hard time working and understanding theBLM rules, add in rules that apply to APS and then County PM 1 0 rules such as P27 and P28 or310.01 and no one will understand what is open or closed.""	The EIS analyzes impacts to the Affected Environment for existing recreational (and other uses) on BLM-managed public lands in Section 4.9. Any planned changes to existing uses are detailed and analyzed in the EIS. This section is referring to the potential for future land uses within the ROW, which would require BLM and APS approval.
Jeff Gursh, AZOHVC and ATR	1276.48	AR	"2.4.3.3 Permanent access road - Permanent is the key word. Nothing bladed and compacted as much as you will do to create and use the access centerline road will grow vegetation. Talk to any BLM representative on OHV damage and that the roads are permanent scars. This will be used by all users in area, from hunters to OHVers to equestrians. The surface will be disturbed and dust will be an issue as will safety to the public since you will only maintain to access your equipment. Funds set aside for BLM to deal with this issue have been mentioned above and should be seriously considered."	Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions. Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. According to APS, long-term maintenance activities are very minor and infrequent. No routine maintenance activities for access roads is planned or anticipated.
Jeff Gursh, AZOHVC and ATR	1276.49	VEG	"Again, we would ask that rather than top or crush or clearcut, any high value plants such as Saguaros, Ocotillos and trees, be saved and transplanted to other BLM sites for rehab purposes. Rarely does the vegetation come back as described in text and the slash that is left from initial clear cutting in other locations is still visible years after the construction is done."	The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Additional clarification has been added to the EIS in Appendix 2A to specify transplanting procedures and requirements for saguaros.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.50	GEN	"2.4.3.5 Permanent disturbance - So along with the permanent road (centerline and spurs} all Shrubs, trees, large cactus, woody veg. and ground cover would be removed around towers ... approx. 0.2 acres per pole. Permanent loss of habitat, permanent source of dust. These areas would be similar to social parking areas and camp sites .. . . something that if the public were to create would be closed and rehabbed by BLM as illegal damage from public that required fixing ..... again, we understand your rules and need, but public only sees damage that seems not to matter I n the area and will continue to do same."	Rehabilitation of temporarily disturbed areas (such as around pole locations) would be required and is described in Section 2.4.4.4. The centerline access would be considered permanent disturbance and the route designated as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions.
Jeff Gursh, AZOHVC and ATR	1276.51	AR	"2.4.3.7 Permanent Disturbances - Chart 2.4.7 from the chart, under Federal lands, your data shows a total of 27 acres or approx. 13 miles of 14 foot wide road ... BLM requires: for each 1 mile of route opened, 3 miles of routes have to close or the equal to in acreage. That would equal over 39 miles of 14 foot wide road .... to mitigate habitat loss, just to build the centerline road and spurs, this does not include the clear-cut corridor.(BLM Fed lands column) Since you tell us in the EIS that no OHV routes will be closed .... where does the 39 miles come from? If not roads, then there should be a very high monetary cost to replace and mitigate the loss of this much habitat. 2.4-4 chart shows 44 acres temporary which is much more likely based on other APS areas with access centerline roads and spurs. In either case, this is a large amount of lost habitat that must be mitigated or compensated for."	Section 4.16.3.1 specifies mitigation for impacts to Sonoran Desert Tortoise, which includes potential compensation for habitat loss.
Jeff Gursh, AZOHVC and ATR	1276.52	SOC	"Though future homes would be impacted by the Carefree route, these homes and business would be moving into home built with the knowledge that the corridor was already there or on its way. Values of the home built after the installation of the corridor would not be affected only the value of the land before they were built."	Impacts to private property that would be affected by Alternatives 2 and 3 were determined based on existing conditions for direct and indirect impacts; and based on plans for future development for cumulative impacts.
Jeff Gursh, AZOHVC and ATR	1276.53	VIS	"DEIS assumes OHV multiuse recreatlonists don't care about what the area looks /Ike and those who do will have to live with it. This area's natural beauty Is part of the attraction for the public to visit this location. We also see It as a big part of the States economy. The tourist Industry Is the only portion of the State Economy that has been fairly stable during the economic down tum. Thousands visit the Boulders from Out of State each year. A natural environment is a must for site seers and OHV alike."	Statement of opinion. Section 4.9.2.2 addresses the impact of the project on the recreational experience. Impacts to the tourist industry are addressed in Section 4.10.
Jeff Gursh, AZOHVC and ATR	1276.54	SAAA	"2.5.4 Sub alternative ASLD lands - State Trust land sales benefit many groups , one of which is the public schools system. Allowing ASLD to select an alternate that does not affect the cost or the other land agencies concerned while allow for highest and best use of trust land seem a win win situation. We support ASLD alternative that allows for better use of ASLD property while having no affect on other agnecy proposals."	Statement of preference.
Jeff Gursh, AZOHVC and ATR	1276.55	OHV	"Page 1561mpact indicator chart - Boulders OHV area is one of the most popular in State and certainly most popular in Maricopa County. Many OHV businesses are located in nearby Peoria and Wickenburg and Surprise area. In addition, gas stations, grocery stores and restaurants all rely heavily on OHV and recreation purchases from this area. The Boulders is one of just a hand full of OHV areas with single track. Impacts and closure of single track will greatly reduce the number of OHv visitors. An at least moderate magnitude of impact"	Section 4.10.2.2, Effects on Recreation, addresses potential adverse effects to socioeconomics associated with recreation in Arizona.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.56	OHV	"Potential Benefit show is new recreational access .•..•....•• from what? New corridor roads that would be open only to non-motorized? You show access to the corridor ROW as illegal for OHV but will encourage other users to access? The negative aspect is change in quality of the recreational experience ... .for whom? The Negatives for the OHV community is closure ... .for nonmotorized it would be a tower/ visual. You missed the impact here. See page 462, 463 on closed to OHV.	The subject text was removed from the EIS.
Jeff Gursh, AZOHVC and ATR	1276.57	OHV	"2.9.8 Recreation and Special designation You state that BLM would not allow new single track to be created to offset loss of single track. You state that BLM will not allow APS to use single track routes for construction access. YET, on page 462, you explain "only" 0.8 miles of single track will be used for access as well as no OHV use in ROW. All single track in this area is connected to by routes that follow and are in the ROW from LP5 and the Boulders OHV area in the West. Your claim of no impact to single track is incorrect .. .in your own document. If OHV use is banned from ROW and close adjacent routes are closed to OHV as is the line access route under the wires, no OHV routes could be in or thru the ROW. This will close access and routes east of Quintero and create dead end trails that will not be dead ends for long."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails.
Jeff Gursh, AZOHVC and ATR	1276.58	OREC	"3.9.2 Recreation overview - You mention undeveloped recreation as being unaffected and include hiking, mountain biking, horseback riding target shooting and dispersed OHV recreation. Then you say that OHV recreation is the only one to talk about because it is the one that will be impacted? All recreation share OHV trails, if you close routes you close to all or you take from one user, in this case Single Track MC I OHV, and give to non-motorized horse, hike and bike. All users get to their recreation in a vehicle, this makes all users and OHVer at one time or another. How do the horsemen access the area if roads are closed? Since all ROW and centerline road is closed to OHV use and non-motorized such as horse , hike and bike are allowed , you have trade away OHV trails for this preferred alternative ..... contradicting EIS in that no OHV trails would be lost."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails.
Jeff Gursh, AZOHVC and ATR	1276.59	OHV	"3.9.4.1 OHV recreation - One of the most popular single track rides for MC OHV has been the routes LP1 ,2 and 3 and the surrounding areas 2 track that allows the single track to be connected into a looped , long distance ride. This area has historically been part of a permitted OHV MC enduro event which would no longer have these historic route available. The Preferred Alternate cuts the access to these trails and all connectivity to the south end of these routes for the ability to make loops. All access from Boulders OHV area from LP5 will be lost. In addition, all hunting access by motorized access from MM14 will be lost. This is a far cry from "no Motorized use will be affected" (ROW and centerline road closed to OHV use) as stated in long term impacts. Please see attached map# ."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.60	OHV	"3.9.4.1 OHV recreation - Page 276 ..... Single track is a misnomer, M.G. use Jeep Roads, ATV roads and single track to create connections and looped trails systems. The issue here is, that should you widen a two track or a Tertiary road to allow equipment, you allow all users to access that route from an area that may not have had access to that route from full size OHV (larger than MC) Single track trails are a rare occurrence on public lands, they are hard to maintain (hand crews) and with this rarity, connecting existing single track together is based on access to wider trails and routes to make the connections. Your document shows that APS will close the ROW and parallel access route to OHV . This will greatly reduce the connectivity of existing area trails to loop trails system or eliminate it all together. This is a far cry from no long term changes as show on page 166."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails. Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. BLM will work with APS to develop a Construction Access Plan to definitively identify access routes on BLM-managed public lands, particularly north of SR 74. Construction access north of SR 74 is envisioned to be limited such that no single-track OHV routes would be used, and a large portion of this area is closed to four-wheel OHV recreation.
Jeff Gursh, AZOHVC and ATR	1276.61	OREC	"3.9.4.2 Target shooting - Though popular, when located in high use areas or unmanaged, impacts are severe. Centerline road and ROW will open up areas that had no access before. The close proximity to existing urban interface and future growth of area in population will create long term issues that will require tremendous amount of resources and funds from BLM to manage. APS should, put in trust, funds to cover these mitigations, See Table Mesa area issues and resources cost from BLM Hasyampa field office."	Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions.
Jeff Gursh, AZOHVC and ATR	1276.62	SOC	"3.10.6 Recreation Expenditures - Many businesses moved to the Peoria, Surprise, Wickenburg and other nearby Cities and towns ... . because of the access for public recreation ... especially OHV recreation. This benefits city tax base (as shown). Other business types benefit too. Gas stations, restaurants, hotels, grocery stores, repair shops.ect .. All benefit from OHV use in the area. Though you seem to think that nothing will change(depending on where you read in the report) or that only the visual aspect will change, tht is not the case. The ROW and centerline droad is closed to all OHV use (all motorized use of any kind). This causes the cut off of routes East of LP 5 and the dead ending of LP1 2 and 3. All are part of long distance single track and part of past Permitted events. This will be a big impact to business that caters to Dirt bike sales, repairs and accessories."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails. Section 4.10.2.2, Effects on Recreation, addresses potential adverse effects to socioeconomics associated with recreation in Arizona.
Jeff Gursh, AZOHVC and ATR	1276.63	GEN	"The original EIS considered the area important enough to rate very highly the need to keep the visual impacts low. The new EIS, to place Corridor on north side of HWY 74, changes that in a big way. For the public, it shows that there is no "big business" or City that cannot change important decisions such as EIS or EA's to get what they want. Whereas the public is stuck following the rules set up in the EA's and EIS to follow. We have no recourse, as APS, to force you to change a Signed EIS .. .. it just would not happen. As I mentioned earlier, this will greatly reduce the number of comments on future EA, ElS, RMPs and planning for both BLM and FS. This is not the way to run the Public side of NEPA for comments."	Section 1.1.2 has been revised to expand information about the RMP development process.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.64	VIS	"The BLM is considering projects for alternative power and public works all over the State. Solar Fields and wind farms will take away hundreds of miles of OHV multiuse trails and have a major impact on Visual resources. How do all these "new "pieces of the landscape fit into Visual Resource management practices? Will they be thrown out to allow more and bigger impacts too? Visual Impacts are part of every NEPA project and was part of the original EA for this area. Please reconsider this impact and the Original EA's needs when deciding on the Power line placement Alternative."	Any project for alternative power or other public works on BLM-managed public lands would require environmental analysis prior to project implementation. The EIS considers the cumulative impact of the proposed project in conjunction with past, present, and reasonably foreseeable projects in Section 4.19.
Jeff Gursh, AZOHVC and ATR	1276.65	SOC	"3.10.8.2 Recreation use - See attached ASU /ASP Economic Impact study and the multiplier effect. The point should be made that though the amount spent per trip may only decrease by 2.2 %, WHERE the money is spent WILL change. Reducing the single track or closing the areas east will move OHV users to another area. This may not seem an issue for those who are not fans of OHV use, but it will greatly affect local business. Look at the closure of the granite Mountain OHV area in north Scottsdale. The city closed a multiagency OHV recreation area, with in a year of closure, two OHV dealers moved out of North Scottsdale area to be near an open OHV recreation site (Peoria} ... the Boulders."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails.
Jeff Gursh, AZOHVC and ATR	1276.66	SOC	"3.12.2 HWY 74 ROW - According to some land owners, the impact to the saleablility of their land would be affected by the placement of Corridor south of HWY 7 4. Please consider the impact of a 10 lane freeway in your decision. As an example, look at the Anthem outlet malls and subdivisions where 2 corridors now existing along hwy 17. There is no shortage of home buyers or business in this area and is a very popular area to live. Homes were built around and under lines. The land just south of Hwy 74 is currently vacant, with the future hwy and if lines place south, anyone buying would know up front of the lines. It is a different story in areas with existing homes and this should be considered in the other portions of the plan."	The cumulative effect of the transmission line along with community development is considered in Section 4.19, cumulative impacts.
Jeff Gursh, AZOHVC and ATR	1276.67	LU	"3.14.1 Laws, Ordinances - The City of Peoria Policy 3.B.4 would apply to Visual resources, Quote" Promote the use of EXISTING utility and major transportation corridors for new overhead utility siting to minimize visual and environmental impacts". That's a big statement and would do more than imply that, like the BLM original EIS for the area north, this is an important visual resource for Peoria's future Preserve and open space. Please consider this in your Decision."	The Proposed Action/Preferred Alternative is the only alternative in the EIS that would comply with the City of Peoria's general plan.
Jeff Gursh, AZOHVC and ATR	1276.68	SSS	"3.16.4 Threatened, Endangered - Please refer to our statements on BLM Tortoise habitat, 3 to 1 match for new roads or open areas. This is the rule of thumb to mitigate damage to habitat."	Section 4.16.3.1 specifies mitigation for impacts to Sonoran Desert Tortoise, which includes potential compensation for habitat loss.
Jeff Gursh, AZOHVC and ATR	1276.69	OHV	"Page464 - Correct on the notion that All users will create new routes and cause a long term issue for BLM management of area affected by Corridor. APS should be required as part of the long term mitigation to set up a trust for long term mitigation and construction of new routes to replace trails and connectivity. Wrong assumption here. You created a road and ROW that Included access roads and trails to looped single track routes. You state that it will be hard to keep MC off but single track MC won't like to run the road. WRONG. Single track will use It evety trip they take to access the single track trails that you isolated with the corridor."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.70	AR	"Target shooting is one of the biggest issues for the BLM and FS. This area has had little target shooting due to its past in accessibility. The Corridor ROW and center line road will open area up to unmanaged shooting. This will cause the loss of vegetation and trash dumping as well as create an environmental issue with lead, so near to water sources. Funds need to be put in trust for BLM to mitigate these issues as well as cover LEO costs to enforce rules to keep users out of ROW and Centerline road."	Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions. Recreation mitigation in Section 4.9 was expanded to include monitoring of the centerline by APS and patrolling of the ROW by BLM, enforcing the designation of the centerline as an administrative route.
Jeff Gursh, AZOHVC and ATR	1276.71	OHV	"Page 481…You state in the comments there would be a moderate to heavy impact to long term single track OHV use and then say in other areas that it would only be short term ... ."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails. In Section 2.9, listed mitigation measures are derived from the direct and indirect impact analysis based on the Proposed Action, which includes the use of single-track trails for construction access, which would result in long-term impacts. However, Section 4.9.3, recreation mitigation, specifies that single track trails would not be allowed for construction access, thus impacts to single-track OHV trails would be short-term during construction.
Jeff Gursh, AZOHVC and ATR	1276.72	OHV	"4.19.10 - Again we see a contradiction from the language in the PA. This state that BLM could abandon some single track. The true problem is that the corridor will bring a new 14 foot wide road that will be impossible to close to OHV use. It will cut existing OHV corridors and eliminate the connectivity to other areas that are a part of the looped trails system on this SRMA area. Single track is rare as we have mentioned in the last 600 pages numerous times. the fact that your P.A. jumps the hwy 74 corridor and runs the whole length of the SRMA shows just how little the OHV and recreation public counts as a consideration for following what we thought was a well designed and had ample time for all concerned to comment."	Section 4.19.10 was revised to eliminate reference to loss of single-track trail.
Jeff Gursh, AZOHVC and ATR	1276.73	OHV	"Since no OHV are allowed in ROW (page 154,462,604 no OHV use or closure), this will close any route in the ROW and cut all access from LP5 and main access to single track from Boulders OHV area. This will not just eliminate the single track East of Quintero Golf Course but create a new centerline road (power line rd.) and clear cut corridor under lines. In addition, access roads for construction have historically been left to access these previously inaccessible areas. On page 166, you note that there will be no long term closure of OHV routes and that it will only be a short term impact with no loss of single track , yet on page 462 you state that at least 0.8 miles (7%) of single track will be used for access road and lost and a moderate to major impact to OHV /Single track users."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails. The referenced area is already closed to most four-wheel OHV access.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.74	OHV	"Page 464 notes that though the center line under line road and ROW is closed to OHV access and use, it may be difficult to keep users out (note: , only non-motorized are restricted) you are correct on the notion that All users will create new routes and cause a long term issue for BLM management of area affected by Corridor. APS should be required as part of the long term mitigation to set up a trust for long term mitigation and construction of new routes to replace trails and connectivity."	Section 4.9.3, recreation mitigation was expanded; however, the EIS stated that should mitigation prove ineffective, APS would be required to institute new/additional mitigation to prevent unauthorized access.
Jeff Gursh, AZOHVC and ATR	1276.75	OHV	"Continuing on this page, you are wrong in your assumption about single track users. You created a road and ROW, closed to motorized, that included access roads and trails to looped single track routes. You state that it will be hard to keep MC off but single track MC won't like to run the road. WRONG. Single track will use it every trip they take to access the single track trails that you isolated with the corridor."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails.
Jeff Gursh, AZOHVC and ATR	1276.76	OHV	"Though you state no closure on page 166, you consistently contradict this in charts and text thru out the remaining document."	In Section 2.9, listed mitigation measures are derived from the direct and indirect impact analysis based on the Proposed Action, which includes the use of single-track trails for construction access, which would result in long-term impacts. However, Section 4.9.3, recreation mitigation, specifies that single track trails would not be allowed for construction access, thus impacts to single-track OHV trails would be short-term during construction.
Jeff Gursh, AZOHVC and ATR	1276.77	OHV	"Page 604 - project could cause BLM to abandon ..... this is a far cry from no long term Affect…"	Section 4.19.10 was revised to eliminate reference to loss of single-track trail.
Jeff Gursh, AZOHVC and ATR	1276.78	SOC	"OHV recreation is a 4.3 BILLION dollar a year industry for AZ economy, we consider this as a direct Impact to that recreation and tourism Industry."	Section 4.10.2.2, Effects on Recreation, addresses potential adverse effects to socioeconomics associated with recreation in Arizona.
Jeff Gursh, AZOHVC and ATR	1276.79	OREC	"Both Peoria and Maricopa County Parks are developing recreation areas north of Hwy 7 4 in this area. Interconnecting trails and routes in and thru affected area will be greatly impacted or completely block In the case of OHV use. Please reconsider and select alternate 3."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails.
Jeff Gursh, AZOHVC and ATR	1276.80	OHV	"Who would foot the bill to do all the needed planning , repairs and law enforcement to recover area? OHV users currently contribute $25 per OHV to State Parks Fund to keep areas open.... we should not have to pay to repair damages from APS placement of ROW corridor."	Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions. Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails. Recreation mitigation in Section 4.9 was expanded to include monitoring of the centerline by APS and patrolling of the ROW by BLM, enforcing the designation of the centerline as an administrative route.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.81	SOC	"We ask that a trust fund be setup , funded by APS, to mitigate the long term cost of the corridor impacts on PUBLIC BLM lands. This could cover the cost of Law enforcement, and area park ranger, relocation of OHV and multiuse routes, mitigation of loss of trail continuity(loop opportunities) resource mitigation form long term clear cutting and topping as well as BLM in house costs for engineering , supervisory and specialist time. We also ask that NO COST TO BLM be incurred for the amendment to the existing EIS nor any future EIS, EA or surveys required to mitigate damage or issues from the placement of the corridor ..... .if located on BLM lands."	Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions. Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails. Recreation mitigation in Section 4.9 was expanded to include monitoring of the centerline by APS and patrolling of the ROW by BLM, enforcing the designation of the centerline as an administrative route. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.
Jeff Gursh, AZOHVC and ATR	1276.82	AR	"AZOHVC Utility Corridors and recreation areas As was seen when the Gas Pipe Line was built along 117 on BLM lands(Table Mesa Area OHV/Multiuse area) and on the Tonto and Prescott FS APS corridors , the trail systems for all users were directly and adversely affected by the new road as well as power line corridor and accompanying clear cut and topping of vegetation in the corridor .. This creates a huge problem with new trails being created from the access roads to build the power lines. These roads would provide access to areas unreachable before construction, causing further resource damage. Similar APS projects on Tonto National Forest and Prescott National Forest show long term issue with the permanent access roads and long term clear cutting and topping maintenance these ultility corridors require."	Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions. Recreation mitigation in Section 4.9 was expanded to include monitoring of the centerline by APS and patrolling of the ROW by BLM, enforcing the designation of the centerline as an administrative route. The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.
Jeff Gursh, AZOHVC and ATR	1276.83	Out of Scope	"The BLM is considering projects for alternative power and public works all over the State. Solar Fields and wind farms will take away hundreds of miles of OHV multiuse trails and have a major impact on Visual resources. How do all these "new" pieces of the landscape fit into Visual Resource management practices? Visual Impacts are part of every NEPA project and was part of the original EA for this area. Please consider this impact and the Original EA's needs when deciding on the Power line placement."	The EIS considers the cumulative impact of the proposed project in conjunction with past, present, and reasonably foreseeable projects in Section 4.19.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.84	SOC	"Estimated costs based on current projects on BLM lands to mitigate type of impacts common in this EIS ROW proposed Preferred Alternative on BLM lands inside the SRMA and original EIS. Costs *Dust treatment per mile (surfactant Dura soil polymer base) Road 20 foot wide $30,000.00/ mile *Dust treatment access roads. This is an engineered road that would allow BLM to meet PM10 ordinances for 20 % opacity test. Typical for access road to parking areas. $70,000.00 I mile for 20 foot road. *Rehab per acre, includes recontour of land, native seed, replanting , soil stabilizer and crusting agent. $4000.00/acre (less design and NEPA and survey costs) *Close areas to public access, this varies with terrain. Anything from gates and fences to boulders and steel bollards can be needed. $1000.00 to $15,000.00 *Cost of law enforcement and or Park ranger .... this will vary based on proximity to urban interface. LEO , multiple days per month $60,000.00/ year, Park Ranger $35,000.00/year. *Signage, this would include PSAs , maps and or literature to educate the public on staying on trails and out of the ROW and centerline roads and spurs. $12,000.00(In the Table Mesa Recreation area, we average $380.00 in replacement signs per month). *Relocate routes that have been closed due to power lines ROW and Centerline road. Though not typical, APS is showing this ROW closed to OHV and Motorized traffic. $12,000.00 to $15,000.00 per mile (USFS Trails Unlimited trail construction Enterprise team average costs) *We will assume that both the Quintero and MM14 rehabbed sites will be damaged during construction based on access road maps in EIS. These areas were done under grants from AZ. State Parks and required BLM to maintain areas for term of grants. APS should be required to follow these special rehab areas as they were part of new procedures to test long term plant growth and rehab procedures. We have no cost figures on the replacement of Tortoise habitat or the loss of habitat and highvalue Cacti and plants but do know BLM requires a 3 to 1 match for the loss of tortoise habitat. That requires that for every mile of road opened , 3 miles of road in similar or higher tortoise habitat has to be closed to allow construction. In some cases, BLM will allow a monetary amount to be used in lieu of the 3 to 1 requirement.	The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Section 4.16.3.1 specifies mitigation for impacts to Sonoran Desert Tortoise, which includes potential compensation for habitat loss. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.84 (Continued)	SOC	*We would ask that rather than trampling , clear cutting or topping , that APS box and move trees, Relocate high value Cacti and other small high value plants, to BLM locations that need this type of vegetation for rehab of other BLM sites. This can be used to close old access roads or ROW Spur roads, as well as replant disturbed areas. AZOHVC has worked with MCDOT and contractors to acquire these types of plant to successfully rehab damaged areas and reduce PM 10 dust problems… Please consider this rather than the current practice of topping. This is just a short list of long term mitigation costs that BLM will incur with placement of ROW on north side of Hwy 74."	
Jeff Gursh, AZOHVC and ATR	1276.85	OHV	"Blue route is proposed new single track to reconnect from LP5 Boulders OHV area trail loops. This uses a combination of old existing route and new construction. Would close MM14 jeep road from HWY 74 to Admin only to reduce the issues with full size OHV trying to access single track. Mine access thru locked gate would be only full size access and only on jeep route to mine."	Section 4.9 has been revised to emphasize that while the centerline access is closed to recreation, single-track users will be allowed to cross the centerline, ensuring continuity of loop trails and no loss of single-track trails. Replacement single-track trail would not be required.
Jeff Gursh, AZOHVC and ATR	1276.86	VEG	"…Topping is the greatest visual impact to the Saguaros. This is something the public has a hard time justifying…note that the chain sawed arms have lost the 'flesh'…"	The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.
Jeff Gursh, AZOHVC and ATR	1276.87	VEG	"This is the Tonto again…Note that 2 of the four Saguaros are dead or dying…Of the 89 Saguaros that were 'topped', 35 are dead and an additional 9 are not close behind."	The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Additional clarification has been added to the EIS in Chapter 2A to specify how saguaros would be handled.
Jeff Gursh, AZOHVC and ATR	1276.88	VEG	"Clear cutting and topping in 2009 allowed users of all kinds (horse, hike, OHV) to create new trails, jumps, race tracks and generally make managing the ROW very expensive. It is difficult to keep users on a road or trail when there is no vegetation or natural terrain to limit them to the route. Signing to keep users on routes is also a big expense."	Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions. Recreation mitigation in Section 4.9 was expanded to include monitoring of the centerline by APS and patrolling of the ROW by BLM, enforcing the designation of the centerline as an administrative route. The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.
Jeff Gursh, AZOHVC and ATR	1276.89	AR	"New roads show up as erosion from little to no vegetation allows water to cut thru open space and damage roads."	Appendix 2A contains BMPs to minimize potential erosion impacts and additional mitigation measures have been added to Section 4.9.
Jeff Gursh, AZOHVC and ATR	1276.90	VIS	"Visual impacts are severe. This type of topping and clear cutting drastically alter the natural look o f the area and create a negative experience when viewing the damaged Saguaros. The chain saw cut plants and Cactus show the destruction and this is especially an issue with Saguaros with there limited habitat and slow growth."	The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Vegetation management specified in the EIS would minimize visual impacts. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.

Table 6.2-1 Public Comments and BLM Response (Continued)

COMMENTOR NAME	COMMENT ID NO.	COMMENT TYPE	COMMENT	RESPONSE TO COMMENT
Jeff Gursh, AZOHVC and ATR	1276.91	AR	"Just west of the Tonto National Forest is the former Granite Mountain Multiuse Recreation area. This area is now a preserve for the City of Scottsdale. In 2009, this was a single 10 foot wide road. In December of that year, APS clear cut under the towers and more than 90 feet on each side of the wire. This created an open ROW that invited motorhomes, campers and new trails that could not be restricted. Though the area is non-motorized, as you can see the traffic is still present. Campers and nature tours use the area daily."	Recreation mitigation in Section 4.9 was expanded to specify locations for gates on the centerline to prevent unauthorized access along the centerline. Mitigation was added to Section 4.9 designating the centerline access as an administrative route, which is intended to prohibit unauthorized recreational use of the ROW, and provide BLM authority to enforce the recreational use decisions. Recreation mitigation in Section 4.9 was expanded to include monitoring of the centerline by APS and patrolling of the ROW by BLM, enforcing the designation of the centerline as an administrative route. The EIS contains a revised Appendix 2B, APS' Transmission Vegetation Management Program. Additional clarification has been added to the EIS in Appendix 2A to specify how saguaros would be handled.
Jeff Gursh, AZOHVC and ATR	1276.92	SOIL	"..the BLM Table Mesa Multiuse / OHV recreation area… is also home to a APS corridor and a gas pipe line corridor. In 2010, APS clear cut all vegetation from the ROW. BLM had just finished layouts for new OHV and Multiuse trails that crossed under the lines and thru the ROW. Once the clear cutting and topping were completed by APS, the new routes had little to no vegetation to keep users on the route. There was nothing to restrict them from going cross country. This cross country travel breaks the crust of the soil, damages plants that hold the soil together and creates a PM10 dust issue. It is also a big impact for managing agency."	See rationale for ID No.1276.91.
Jeff Gursh, AZOHVC and ATR	1276.93	OREC	"This is the BLM Table Mesa area Spur road from access road. Shooters have taken the spur and turned the whole hillside into a shooter site, note all vegetation scoured from hillside by bullets. This area had to be fenced and signed and has regular BLM LEO and ranger patrols to keep closed. This is a huge expense to BLM and should be covered by APS as a long term mitigation affect from ROW."	See rationale for ID No.1276.91.
Tom Mindak	1277.1	OPP ALT3	"I'm a home owner in Trilogy of Vistancia, Peoria, Arizona. Please vote no for installing power lines in our area."	Statement of preference.
Walter "Skip" Zahlmann	1278	UC	Content unrelated to analysis	
Walter "Skip" Zahlmann	1279	INFO	Request for wildlife studies, no comment	Request for information is beyond the scope of the BLM.

This page intentionally left blank.

TABLE OF CONTENTS

CHAPTER 7 REFERENCES, ACRONYMS, ABBREVIATIONS, GLOSSARY, AND INDEX 7-1

7.1 References 7-1
7.2 Acronyms and Abbreviations 7-32
7.3 Glossary 7-42
7.4 Index 7-54

This page intentionally left blank.

CHAPTER 7 REFERENCES, ACRONYMS, ABBREVIATIONS, GLOSSARY, AND INDEX

7.1 REFERENCES

Abella. 2010. Disturbance and plant succession in the Mojave and Sonoran deserts of the American Southwest. International Journal of Environmental Research and Public Health 7:1248-1284.

ABM (Arizona Bureau of Mines). 1961. Map and Index of Arizona Mining Districts. Compiled by Eldred D. Wilson, Robert T. O'Haire, and Fred J. McCrory, using USGS base map. August.

ACC (Arizona Corporation Commission). 2010. Background and Organization. http://www.azcc.gov/Divisions/Administration/about.asp. March 7, 2013.

ACC (Arizona Corporation Commission). 2009. Arizona Corporation Commission, Docket No. L-00000 D-08-0330-00138. Case No. 138. Decision No 7-850. Issuance of the Certificate of Environmental Compatibility. March 17, 2009.

ACC (Arizona Corporation Commission). 2008. Arizona Corporation Commission, Docket No. L-00000 D-08-0330-00138. Case No. 138. Procedural Order and Notice of Filing. December 29, 2008.

ADEQ (Arizona Department of Environmental Quality). 2011. Statewide Impaired Waters Interactive Geographic Information System eMaps. http://gisweb.azdeq.gov/arcgis/emaps/?topic=impaired. Accessed on November 10, 2011.

ADEQ (Arizona Department of Environmental Quality). 2009. 2006/2008 Status of Ambient Surface Water Quality in Arizona – Arizona's Integrated 305(b) Assessment and 303(d) Listing Report. November. 596 pp.

ADOT (Arizona Department of Transportation). 2011. Final Feasibility Report, Project No. 074 MA 00H724801L, SR 74 MP 0.0 to MP 22.0, SR 74 Right-of-Way Preservation. March 15, 2011.

ADOT (Arizona Department of Transportation). 2006. Arizona wildlife linkages assessment. The Arizona Wildlife Linkages Workgroup, 208 pp.

ADWR (Arizona Department of Water Resources). 2011. Water Resource Data Well Registry (Wells55) and Groundwater Site Inventory. https://gisweb.azwater.gov/waterresourcedata/. Website accessed on December 2, 2011.

AEC (Applied Environmental Consultants, a JBR Company). 2011. Amendment to Emission Inventory Information, Rosemont Copper Project, (Mobile 6.2 emission factors).

AGFD (Arizona Game and Fish Department). 2011a. Arizona OHV Trails and Places to Ride. http://www.azgfd.gov/outdoor_recreation/arizona_ohv_trails_places.shtml. Accessed on October 10, 2011.

AGFD (Arizona Game and Fish Department). 2011b. Bald Eagle Management Program. Available at: http://www.azgfd.gov, Accessed: November 2011.

AGFD (Arizona Game and Fish Department). 2010. Special status species by county, taxon, scientific name. Arizona Game and Fish Department, Phoenix Arizona. Updated November 24, 2010, accessed September 2011.

AGFD (Arizona Game and Fish Department). 2006. DRAFT. Arizona's Comprehensive Wildlife Conservation Strategy: 2005-2015. Arizona Game and Fish Department, Phoenix, Arizona.

Ahlbom, S.A. 2008. Exposure to electromagnetic fields and the risk of childhood leukemia: a review. Radiation Protection Dosimetry, 132(2), p. 202-211.

Ahlstrom, R.V.N., M. Adair, R.T. Euler, and R.C. Euler. 1992. Pothunting in Central Arizona: The Perry Mesa Archeological Site Vandalism Study. Cultural Resources Management Report 13. Southwestern Region, U.S. Forest Service, and Bureau of Land Management, Phoenix, Arizona.

AIDTT (Arizona Interagency Desert Tortoise Team). 1996. Management Plan for the Sonoran Desert Population of the Desert Tortoise in Arizona. 62pp.

AirNav. 2011a. Pleasant Valley Airport (P48) Information website. Available at http://www.airnav.com/airport/P48. Accessed October 2011.

AirNav. 2011b. Ranta Strip Airport (12AZ) Information website. Available at http://www.airnav.com/airport/12AZ. Accessed October 2011.

AirNav. 2011c. Thunder Ridge Airpark (AZ28) Information website. Available at http://www.airnav.com/airport/AZ28. Accessed October 2011.

AirNav. 2011d. Castle Well Airport (0AZ5) Information website. Available at http://www.airnav.com/airport/0AZ5. Accessed October 2011.

AirNav. 2011e. Roesner Ranch Airport (AZ32) Information website. Available at http://www.airnav.com/airport/AZ32. Accessed October 2011.

Al-Sayegh, O, and A. Qabazard. 2007. Artificial Neural Networks to Estimate the EMF ELF on Car Travelling Near Power Transmission Line. Proceedings of the 9th IASTED International Conference, Power and Energy Systems, January 3-5, Clearwater, Florida.

Anderson, T.W. 1995. Summary of the southwest alluvial basins, regional aquifer-system analysis south-central Arizona and parts of adjacent states. U. S. Geological Survey Professional Paper 1406-A.

Anderson, T.W. 1986. Geohydrology of the southwest alluvial basins, Arizona in Regional Aquifer Systems of the United States, Southwest Alluvial Basins of Arizona. American Water Resources Association Monograph Series No. 7., pp. 99-111.

Anderson, T.W., G.W. Feethey, and P. Tucci. 1992. Geohydrology and water resources of alluvial basins in south-central Arizona and parts of adjacent states. U.S. Geological Survey Professional Paper 1406-B.

ANSI (American National Standards Institute). 2012. National Electric Safety Code. ANSI C2/NESC. 12th Edition.

APLIC (Avian Power Line Interaction Committee). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.

APLIC (Avian Power Line Interaction Committee). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA. PIER Final Project Report CEC-500-2006-022. Washington, D.C. and Sacramento, CA. Available online at http://www.aplic.org/mission.php.

APS (Arizona Public Service Company). 2012. Project Land Acquisition Cost Estimate.

APS (Arizona Public Service Company). 2011a. Project Land Cost Spreadsheet.

APS (Arizona Public Service Company). 2011b. Project Management Department and Overhead System Design Department. Project Construction Cost Estimate.

APS (Arizona Public Service Company). 2009. Renewable Transmission Action Plan.

APS (Arizona Public Service Company). 2008a. Arizona Corporation Commission Certificate of Environmental Compliance Application. July 2008.

APS (Arizona Public Service Company). 2008b. Arizona Corporation Commission Certificate of Environmental Compliance Application, Exhibit B-1, Environmental Report. June 2008.

Archer, Steven R., and Katherine I. Predick. 2008. "Climate change and ecosystems of the Southwestern United States." Rangelands (Society for Range Management), June: 23-28.

Arizona Department of Commerce. 2009. Community Profiles.

Arizona Interstate Stream Commission. 1967. Water Resources State of Arizona. Phoenix. 75 pp.

Arizona Office of Employment and Population Statistics. 2007. Population Projections, 2006-2055 population projections.

Arizona State Legislature. 2007a. 40-360.03. Applications prior to construction of facilities. http://www.azleg.state.az.us. March 7, 2013.

Arizona State Legislature. 2007b. 40-360.06. Factors to be considered in issuing a certificate of environmental compatibility.

Arizona State Parks. 2007. 2008 Arizona State Comprehensive Outdoor Recreation Plan. September 2007.

Arizona State Parks. 2003. Economic Importance of Off-Highway Vehicle Recreation to Arizona. <www.azstateparks.com>.

Arizona Water Commission. 1975. Water Resources, State of Arizona. Phoenix. 224 pp.

Arrowsmith, J. Ramón. 1997. Seismic Hazard Analysis for Phoenix/Scottsdale. May 1997.

ASLD (Arizona State Land Department). 2012a. Email from Ruben Ojeda, ASLD to Joe Incardine, BLM providing language explaining ASLD's mission. May 21, 2012.

ASLD (Arizona State Land Department). 2012b. Email from Ruben Ojeda, ASLD to Joe Incardine, BLM explaining ASLD's purpose and need for the Sub-alternative route. March 5, 2012.

ASLD (Arizona State Land Department). 2012c. Livestock grazing allotment Geographical Information System (GIS) data received from the Arizona State Land Department on January 20, 2012.

ASLD (Arizona State Land Department). 2011a. State Land Department Historical Overview. http://www.land.state.az.us/history.htm. Accessed October 30, 2011.

ASLD (Arizona State Land Department). 2011b. State Trust Land at a Glance. http://www.land.state.az.us/news/ataglance.htm. Accessed on October 11, 2011.

ASU (Arizona State University). 2009. The Price of Stewardship: The Future of Arizona State Parks. Morrison Institute for Public Policy.

ASU (Arizona State University). 2006. Maricopa County Parks Visitor Study Final Report.

AZGS (Arizona Geological Survey). 2011a. Contributed Report CR-11-D Suggested Guidelines for Investigating Land-subsidence and Earth Fissure Hazards in Arizona. Compiled by Arizona Land Subsidence Interest Group. August.

AZGS (Arizona Geological Survey). 2011b. Fiscal Year 2011 Annual Report. Compiled and edited by M. Lee Allison and Kimberly J. Patten. August.

AZGS (Arizona Geological Survey). 2007. Contributed Report CR-07-C Research and Informational Needs for Effective Risk Management. Prepared by Arizona Land Subsidence Group. December.

AZGS (Arizona Geological Survey). 2002. Publication Down-To-Earth 13, A Home Buyer's Guide to Geologic Hazards in Arizona, Earthquakes (7–10), Problem Soils (11–15), Mass Movements (16–19).

AZGS (Arizona Geological Survey). 1998a. Open-File Report 98-24. Quaternary Fault Data and Map for Arizona. Compiled by Philip A. Pearthree. September.

AZGS (Arizona Geological Survey). 1998b. Open-File Report 98-19 Geologic Map of the Biscuit Flat 7.5' Quadrangle, Maricopa County, Arizona. Compiled by Robert S. Leighty and Gary Huckleberry. November.

AZGS (Arizona Geological Survey). 1994. Open-File Report 94-21 Surficial Geology of the Wittmann and Hieroglyphic Mountains Southwest 7.5' Quadrangles, Northern Maricopa County, Arizona. Compiled by Gary Huckleberry. October.

AZGS (Arizona Geological Survey). 1988a. Open-File Report 88-01 Geologic Map of the Southern Hieroglyphic Mountains, Central Arizona. Compiled by David E. Wahl, Jr., Stephen J. Reynolds, Richard C. Capps, Curtis P. Kortemeier, Michael J. Grubensky, Elizabeth A. Scott, and James A. Stimac. February 1988.

AZGS (Arizona Geological Survey). 1988b. Open-File Report 88-10 Geologic Map of the Vulture Mine Area, Vulture Mountains, West–Central Arizona. Compiled by Stephen J. Reynolds, Jon E. Spencer, Ed DeWitt, Don C. White, and Michael J. Grubensky. May 1988.

AZGS (Arizona Geological Survey). 1987. Open-File Report 87-9 Geologic Map of the Wickenburg, southern Buckhorn, and northwestern Hieroglyphic Mountains, central Arizona. Compiled by James A. Stimac, Joan E. Fryxell, Stephen J. Reynolds, Stephen M. Richard, Michael J. Grubensky, and Elizabeth A. Scott. October.

AZGS (Arizona Geological Survey). 1979. Open-File Report 79-8 Geothermal Development Plan: Maricopa County. Compiled by The Arizona Geothermal Commercialization Team, Don H. White, Ph.D., and Larry A. Goldstone.

Barnes, J.D., L.N. Miller, and E.W. Wood. 1976. Prediction of noise from power plant construction. Bolt Beranek and Newman, Inc. Cambridge, MA. Prepared for the Empire State Electric Energy Research Corporation, Schenectady, NY.

*Beauregard Conseil, Enr. 1990. Rapport final: suivi des impacts de la traversee du Fleuve par une ligne hydro-electrique entre Grondines et Lotbiniere sur les residents de la region immediate. Prepared for Vice-Presidence Environnement, Hydro Quebec. Cited in: Goodrich-Mahoney, J. 2003. Transmission Line and Property Values: State of the Science. EPRI, November.

Beier, P. D. Majka, and T. Bayless. 2006. Arizona missing linkages: Wickenburg-Hassayampa linkage design. Report to Arizona Game and Fish Department. School of Forestry, Northern Arizona University. 68pp +Appendices.

Berglund, B., and Lindvall, T., ed. 1995. Community Noise, Center for Sensory Research, Stockholm.

Bureau of Land Management (BLM). 2013. Lake Pleasant Herd Management Area. Available online at http://www.blm.gov/az/st/en/prog/whb/hmas/lk_pleasant.html.

BLM (Bureau of Land Management). 2012a. Land and Mineral Legacy Rehost 2000 System – LR2000, Public Case Recordation Reports, Geographic Report with Land Sorted by MTR. 1 page. Accessed online at http://www.blm.gov/landandresourcesreports/rptapp/menu.cfm?appCd=2; report run 07/26/2012 at 4:02 PM.

BLM (Bureau of Land Management). 2012b. Land and Mineral Legacy Rehost 2000 System – LR2000, Public Case Recordation Reports, Serial Register Page, Serial Number AZA 023029. 1 page. Accessed online at http://www.blm.gov/landandresourcesreports/rptapp/menu.cfm?appCd=2; report run 07/26/2012 at 4:15 PM.

BLM (Bureau of Land Management). 2012c. Land and Mineral Legacy Rehost 2000 System – LR2000, Mining Claim Geographic Report, List of Active Mining Claims by Section. 17 pages. Accessed online at http://www.blm.gov/landandresourcesreports/rptapp/menu.cfm?appCd=2; report run 07/27/2012 at 11:41 PM.

BLM (Bureau of Land Management). 2012d. Land and Mineral Legacy Rehost 2000 System – LR2000, Geographic Report (Case Recordation, Mining Claim, Status), by Serial Number. 1 page. Accessed online at http://www.blm.gov/landandresourcesreports/rptapp/menu.cfm?appCd=2; report run 07/31/2012 at 9:05 AM.

BLM (Bureau of Land Management). 2012e. Legacy Rehost 2000 System – LR2000 System - LR2000, Right-of-Way Research. Accessed online in July 2012.

BLM (Bureau of Land Management). 2012f. Livestock grazing allotment Geographical Information System (GIS) data obtained from Bureau of Land Management on January 20, 2012.

BLM (Bureau of Land Management). 2011a. Internal meeting notes between BLM, LAFB, EPG, and Galileo.

BLM (Bureau of Land Management). 2011b. Mining Claims and Sites on Federal Lands. P-048. 44 pages. Accessed online at: http://www.blm.gov/wo/st/en/prog/more/non_energy_minerals.html. May 2011.

BLM (Bureau of Land Management). 2011c. Sonoran Solar Energy Project Final Environmental Impact Statement, October. http://www.blm.gov/az/st/en/prog/energy/solar/sonoran_solar/maps/feis.html. Last accessed December 8, 2011.

BLM (Bureau of Land Management). 2011d. Proposed APS Sun Valley to Morgan 500/230kV Transmission Line Project and Proposed Resource Management Plan Amendment – Public Scoping Report. Phoenix, Arizona. Prepared by Environmental Planning Group and Galileo Project, LLC.

BLM (Bureau of Land Management). 2011e. Summary of EIS Economic Strategies Workshop: APS Sun Valley to Morgan Transmission Line Project. August 10, 2011.

BLM (Bureau of Land Management). 2010a. Bradshaw-Harquahala Record of Decision and Approved Resource Management Plan. https://www.blm.gov/epl-front-office/projects/lup/1350/13350/13400/default.jsp?projectName=Bradshaw+Harquahala+RMP+. Accessed on October 14, 2011.

BLM (Bureau of Land Management). 2010b. Agua Fria and Bradshaw-Harquahala Final Resource Management Plan and Final Environmental Impact Statement. Phoenix Field Office, Phoenix, Arizona, 807pp.

BLM (Bureau of Land Management). 2010c. Updated BLM Sensitive Species List for Arizona. Arizona State Office, Phoenix, Arizona, 5pp.

BLM (Bureau of Land Management). 2009a. Approved Resource Management Plan Amendments/Record of Decision (ROD) for designations of Energy Corridors on Bureau of Land Management-administered Lands in the 11 Western States. January 2009.

BLM (Bureau of Land Management). 2009b. Phoenix District Fire Management Plan 2009. Phoenix Field Office. May 13.

BLM (Bureau of Land Management). 2008a. Agua Fria National Monument and Bradshaw-Harquahala Planning Area Proposed Resource Management Plans and Final Environmental Impact Statement, BLM, Phoenix District Office, June.

BLM (Bureau of Land Management). 2008b. BLM NEPA Handbook, H-1790-1.

BLM (Bureau of Land Management). 2008c. Special Status Species Manual 6840. Revised December 2008.

BLM (Bureau of Land Management) 2007. Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement. June.

BLM (Bureau of Land Management). 2005. Land Use Planning Handbook. Bureau of Land Management Handbook H-1601-1. Washington, D.C.

BLM (Bureau of Land Management). 2004. BLM Manual 8120, Tribal Consultation under Cultural Resource Authorities.

BLM (Bureau of Land Management). 2001. The Federal Land Policy and Management Act of 1976 As Amended. October 2001.

BLM (Bureau of Land Management). 2000. Legacy Rehost 2000. http://www.blm.gov/landandresourcesreports/rptapp/menu.cfm?appCd=2. Accessed on February 8, 2012.

BLM (Bureau of Land Management). 1997. Arizona Standards for Rangeland Health and Guidelines for Grazing Administration. http://www.blm.gov/pgdata/etc/medialib/blm/az/pdfs/ 3809.Par.41426.File.dat/AZS_n_G.pdf. Accessed on October 15, 2011.

BLM (Bureau of Land Management). 1996. Sampling Vegetation Attributes, Interagency Technical Reference. BLM.TD.DY-96/002+1730.

BLM (Bureau of Land Management). 1988. Phoenix Resource Management Plan and Environmental Impact Statement.

BLM (Bureau of Land Management). 1986. Visual Resource Inventory. Bureau of Land Management Manual Handbook 8410-1. Washington, D.C.

BLM (Bureau of Land Management). 1981. BLM Lower Gila North Management Framework Plan, June 1981.

Bolton, D.R., and K.A. Sick. 1998. "Power Lines and Property Values: The Good, The bad and The Ugly. Proceedings of the INSTITUTE ON PLANNING, ZONING AND EMINENT DOMAIN, Municipal Legal Studies Center, Dallas, Texas, November 18-20, 1998, and The Urban Lawyer, The National Quarterly on State and Local Government Law, Spring 1999, Volume 31, Number 2. Accessed at www.harriscompanyrec.com.

Bond, S. and J. Hopkins. 2000. The impact of transmission lines on residential property values: results of a case study in a suburb of Wellington. New Zealand Pacific Rim Property Research Journal, Vol. 6(2), pp. 52-60.

*Boyer, C. 1978. The Socio-economic Impacts of Electric Transmission Corridors: A Comparative Analysis. Royal Commission on Electrical Planning, University of Waterloo, Waterloo. Cited in: Goodrich-Mahoney, J. 2003. Transmission Line and Property Values: State of the Science. EPRI, November.

Brennan T. C. 2008. Online field guide to the reptiles and amphibians of Arizona. Available at: http://www.reptilesofaz.org/, Accessed: September 2011.

Brown, J.G. and D.R. Pool. 1989. Hydrogeology of the western part of the Salt River Valley, Maricopa County, Arizona: U.S. Geological Survey Water-Resources Investigations Report 88–4202, 5 sheets.

Bureau of Economic Analysis. 2001 and 2009. Regional Economic Accounts Data. http://www.bea.gov/regional/.

Bureau of Labor Statistics. 2010. Employment and Unemployment Data. http://www.bls.gov/data/#employment.

California Department of Transportation. 2009. Technical Noise Supplement. Prepared by ICF Jones & Stokes, Sacramento, California. November.

CAP (Central Arizona Project). 2011a. Central Arizona Project Website. http://www.cap-az.com. September 8, 2011.

CAP (Central Arizona Project). 2011b. Letter from Gary Ijams, Power Programs Manager, CAP, to Richard Stuhan, APS. August 15, 2011.

CCSP (Climate Change Science Program). 2008. The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity in the United States. http://www.climatescience.gov/Library/sap/sap4-3/final-report/Synthesis_SAP_4.3.pdf. Accessed October 2011.

Center for Biological Diversity, et al., v. Bureau of Land Management, et al. 2005. United States District Court for the Northern District of California. Case 3:03-cv-02509. Filed 03/14/2006, pp. 1-67.

*Chalmers, J. and F. Voorvaart. 2009. High-Voltage Transmission Lines: Proximity, Visibility and Encumbrance Effects. *The Appraisal Journal*, pp. 227-245. Cited in: Jackson, T., and J. Pitts. 2010. The Effects of Electric Transmission Lines on Property Values: A Literature Review. *Journal of Real Estate Literature*, pp. 239-259.

City of Peoria. 2011. Specific Area Plan Amendment. September.

City of Peoria. 2010. Peoria General Plan, City of Peoria Arizona. http://www.peoriaaz.gov/content2.asp?id=25810. Accessed on October 15, 2011.

City of Peoria. 2006. Parks, Recreation, Open Space, and Trails Master Plan. http://www.peoriaaz.gov/uploadedFiles/PeoriaPROST_Final_10-6-06.pdf. Accessed on October 11, 2011.

City of Surprise. 2008a. Surprise General Plan 2030: One City, Many Voices. http://www.surpriseaz.gov/files/GeneralPlan2030/GeneralPlan2030OneCityManyChoices.pdf. Accessed on October 17, 2011.

City of Surprise. 2008b. Surprise Parks and Trails Master Plan. http://www.surpriseaz.gov/DocumentView.aspx?DID=3760. Accessed on October 14, 2011.

Colwell, P. 1990. Power Lines and Land Value. Journal of Real Estate Research, 5(1), pp. 117-127.

*Colwell, P., and K. Foley. 1979. Electric Transmission Lines and the Selling Price of Residential Property. *The Appraisal Journal*, 47(4), pp. 490-499. Cited in: Jackson, T., and J. Pitts. 2010. The Effects of Electric Transmission Lines on Property Values: A Literature Review. *Journal of Real Estate Literature*, pp. 239-259.

Commission for Environmental Cooperation. 1997. Ecological Regions of North America: Toward a Common Perspective. Retrieved November 4, 2011 from ftp:// ftp.epa.gov/ wed/ ecoregions/ cec_na/ CEC_NAeco.pdf.

Commission for Environmental Cooperation. n.d. Ecological Regions of North America Level I (map). Retrieved November 4, 2011 from ftp://ftp.epa.gov/wed/ecoregions/cec_na/NA_LEVEL_I.pdf.

Connecticut Department of Public Health. 2008. Electric and Magnetic Fields: Health Concerns. Fact Sheet. April.

Cordy, G.E., J.A.H. Rees, R.J. Edmonds, J.B. Gebler, L. Wirt, D.J. Gellenbeck, and D.W. Anning. 1998. Water-quality assessment of the Central Arizona Basins, Arizona and Northern Mexico—Environmental setting and overview of water quality: U.S. Geological Survey Water-Resources Investigations Report 98–4097, 71 pp.

Corkhill, E., S. Corell, B. Hill, and D. Carr. 1993. A Regional Groundwater Flow Model of the Salt River Valley – Phase I, Phoenix Active Management Area, Hydrogeologic Framework and Basic Data Report. Arizona Department of Water Resources Modeling Report No. 6.

Damon, P.E., D.J. Lynch, and M. Shafiqullah. 1984. Cenozoic landscape development in the Basin and Range province of Arizona. in T. L. Smiley, J. D. Nations, T. L. Péwé, and J. P. Schafer (editors). Landscapes of Arizona. University Press of America, Lanham, Maryland. p. 175–206.

Davis, J. N. 1999. Lawrence's Goldfinch (*Spinus lawrencei*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/480.

Davis, L. 2010. The Effect of Power Plants on Local Housing Values and Rents. The Review of Economics and Statistics, UC Berkeley Press, pp. 1-30.

Davis, L. 2008. The Effect of Power Plants on Local Housing Values and Rents: Evidence From Restricted Census Microdata. US Census Bureau Center for Economic Studies Paper No. CES-WP-08-19.

Delaney, C., and D. Timmons. 1992. High voltage Power Lines: Do They Affect Residential Property Value? Journal of Real Estate Research, 7(3), pp. 315-29.

Department of Defense. 2007. Luke Air Force Base Auxiliary Field #1. http://www.luke.af.mil/library/factsheets/factsheet.asp?id=6753. Accessed on October 17, 2011.

Des Rosiers, F. 2002. Power Lines, Visual Encumbrance and House Values: A Microspatial Approach to Impact Measurement. Journal of Real Estate Research, 23(3).

Diamond Ventures. 2011. Master Planned Communities: Saddleback Heights. Website accessed 1/16/2012 online at: http://www.diamondventures.com/master/properties/saddleback.html.

DOI (U.S. Department of the Interior). 2011. The DOI's Economic Contributions.

DOI (U.S. Department of the Interior). 2009a. Department Manual 516.

DOI (U.S. Department of the Interior). 2009b. Guidance for Implementation of Federal Wildland Fire Management Policy. Prepared by U.S. DOI and U.S. Department of Agriculture. February 13.

DOI (U.S. Department of the Interior). 1995a. Federal Wildland Fire Management Policy and Program Review, Final Report. Prepared by U.S. DOI and U.S. Department of Agriculture. December 18.

DOI (U.S. Department of the Interior). 1995b. Department of Interior Environmental Justice Strategic Plan, accessed on line at http://www.doi.gov/pmb/oepc/Environmental-Justice-Goal-1.cfm July 25, 2012.

Draper, G., T. Vincent, M.E. Kroll, and J. Swanson. 2005. Childhood cancer in relation to distance from high voltage power lines in England and Wales: A Case-control study. British Medical Journal, v. 330, June 4.

DTCT (Desert Tortoise Compensation Team). 1991. Compensation for the desert tortoise. A report prepared for the Desert Tortoise Management Oversight Group. Approved November 1991.

Dubas, L. 2010. Geological Update for the Combined SRV and Lower Hassayampa Regional Groundwater Flow Model Areas in the Phoenix Aquifer Management Areas. Arizona Department of Water Resources Hydrology Division Modeling Report No. 23. December. 52 pp.

Dubas, L.A., and T.D. Davis, 2006. Salt River Valley Model Geology Update: Arizona Department of Water Resources Modeling Report No. 16.

*Economics Consultants Northwest. 1990. Garrison-Taft high voltage transmission line social monitoring study. Report Submitted to the Facility Siting Bureau of the Energy Division of the Montana Department of Natural Resources and Conservation and the Bonneville Power Administration. Cited in: Goodrich-Mahoney, J. 2003. Transmission Line and Property Values: State of the Science. EPRI, November.

EPRI (Electric Power Research Institute). 1982. Socioeconomics of Power Plants. EA-2228 [1].pdf. Accessible at: http://myepri.com.

Ellis, L. A., D. M. Weddle, S. D. Stump, H. C. English, and A. E. Graber. 2008. Southwestern willow flycatcher final survey and monitoring report. Arizona Game and Fish Department, Research Technical Guidance Bulletin #10, Phoenix, Arizona, USA.

EMF-Link. 2000. Information Ventures, Inc. http://infoventures.com/private/federal/q&a/qa-envn2.html. January 12.

EPA (U.S. Environmental Protection Agency). 2011a. Level III and IV Ecoregions of the Conterminous United States (map). Retrieved September 12, 2011 from http://www.epa.gov/wed/pages/ecoregions.html.

EPA (U.S. Environmental Protection Agency). 2011b. http://www.epa.gov/air/criteria.html Table 2. Accessed September 2011.

EPA (U.S. Environmental Protection Agency). 2011c. Arizona Class I Areas. http://www.epa.gov/region9/air/maps/az_clss1.html. Accessed September 2011.

EPA (U.S. Environmental Protection Agency). 2011d. How clean is the electricity I use? Power Profiler. http://www.epa.gov/cleanenergy/energy-and-you/how-clean.html. Accessed October 2011.

EPA (U.S. Environmental Protection Agency). 2010a. Primary Distinguishing Characteristics of Level III Ecoregions of the Continental United States. Available at ftp://ftp.epa.gov/wed/ecoregions/us/Eco_Level_III_descriptions.doc. Accessed October 20, 2011.

EPA (U.S. Environmental Protection Agency (EPA). 2010b. Final Rule: Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule (Fact Sheet). http://www.epa.gov/nsr/documents/20100413fs.pdf. Accessed October 2011.

EPA (U.S. Environmental Protection Agency). 2010c. http://www.epa.gov/air/caa/title1.html#ic. Accessed September 2011.

EPA (U.S. Environmental Protection Agency). 2008. Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006. Published April 15, 2008.

EPA (U.S. Environmental Protection Agency). 2007. eGRID 2010 Version 1.1 Year 2007 GHG Annual Output Emission Rates. http://www.epa.gov/cleanenergy/documents/egridzips/eGRID2010V1_1_year07_GHGOutputrates.pdf. Accessed October 2011.

EPA (U.S. Environmental Protection Agency). 2004. Crankcase emission factors for non-road engine modeling – compression - emission.

EPA (U.S. Environmental Protection Agency). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Report No. EPA/ONAC 550/9-74-004. Washington, D.C.: U.S. Environmental Protection Agency Office of Noise Abatement and Control. March.

European Council Recommendation. 1999. On the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). Official Journal of the European Communities, July 12. (1999/519/EC).

FAA (Federal Aviation Administration). 2007. FAA Advisory Circular AC 70/7460-1K. Obstruction Marking and Lighting.

FAA (Federal Aviation Administration). 1993. Objections Affecting Navigable Air Space, Part 77. Accessed on ftp://ftp.dot.state.pa.us/public/bureaus/aviation/Web/FAR_Part77.pdf. Accessed October 14, 2011.

Farnsworth, D.K., E.S. Thompson, and E.L. Peck. 1982. Annual free water surface (FWS) evaporation - shallow lake, 1956–1970. in Evaporation atlas for the contiguous 48 United States: Washington, D.C., National Oceanic and Atmospheric Administration, National Weather Service Report NWS 33, Map 3, scale 1:4,800,000.

FCC (Federal Communications Commission). 1999. Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields, OET Bulletin 56, 4th Edition, August. Office of Engineering & Technology.

FCDMC (Flood Control District of Maricopa County). 2010. Hydrologic Data Report Volume II – Surface Water and Stream Flow Data for Water Year 2010. 454 pp.

Federal Office of Civil Aviation Switzerland. 2009. Guidance on determination of helicopter emissions.

FEMA (Federal Emergency Management Agency). 2011a. Definitions of FEMA Flood Zone Designations. https://msc.fema.gov/webapp/wcs/stores/servlet/info?storeId=10001&catalogId=10001&langId=-1&content=floodZones&title=FEMA%2520Flood%2520. Zone%2520Designations. Website accessed on November 1, 2011.

FEMA (Federal Emergency Management Agency). 2011b. Definitions of FEMA Flood Zones.http://www.fema.gov/plan/prevent/floodplain/nfipkeywords /flood_zones.shtm. Website accessed on November 1, 2011.

Fenneman, Nevin M. 1931. Physiography of Western United States. London: McGraw Hill.

FHA (Federal Highway Administration). 2006. Construction Noise Handbook. Draft Supplemental Environmental Impact Statement for the ON Line Project (BLM 2009).

Fontana, B.L. 1983. Pima and Papago: Introduction, in Handbook of North American Indians, Vol. 10, Southwest, pp. 125-136. A. Ortiz (ed.). Smithsonian Institution, Washington, D.C.

Freihoefer, A.T., D.A. Mason, J.A. Jahnke, L.A. Dubas, and K.B.P. Hutchinson. 2009. Regional Groundwater Flow Model of the Salt River Valley, Phoenix Active Management Area Model Update and Calibration: Arizona Department of Water Resources Modeling Report No. 19.

Frija, G., J. Bittoun, G. Krestin, and D. Norris. 2006. European directive on electromagnetic fields. European Radiology. December, Vol. 16, Issue 12, pp. 2886-2889.

Furby, L., R. Gregory, P. Slovie, and B. Fischhoff. 1988. Electric Power Transmission Lines, Property Values, and Compensation. The Journal of Environmental Management, 27, pp. 69-83.

GAO (Government Accountability Office). 2008. Climate Change: Agencies should develop guidance for addressing the effects on federal land and water resources. Washington, DC.: United States Government Accountability Office.

Garfin, G., M. A Crimmins, and K. Jacobs. 2007. "Drought, Climate Variability, and Implications for Water Supply and Management." In Arizona Water Policy: Management Innovations in an Urbanizing, Arid Region, by B. G. Colby and K. (eds Jacobs), 61-78. Washington, DC.: Resources for the Future.

Gebert, W.A., D.J. Graczyk, and W.R. Krug. 1987. Average annual runoff in the United States 1951-1980. http://water.usgs.gov/GIS/metadata/usgswrd/XML/runoff.xml. Website accessed on October 21, 2011.

Gelt, Joe. 1992. “Land Subsidence, Earth Fissures Change Arizona Landscape,” Arroyo, Volume 6, Number 2, Water Resources Research Center, University of Arizona. http://ag.arizona.edu/azwater/arroyo/062land.html. Accessed September 27, 2011.

Genuis, Stephen J. 2008. Fielding a current idea: exploring the public health impact of electromagnetic radiation. Public Health, February, Vol. 122, Issue 2, pp. 113-124.

Goodrich-Mahoney, J. 2003. Transmission Line and Property Values: State of the Science. EPRI, November.

Green, Margerie. 1989. Settlement, Subsistence, and Specialization in the Northern Periphery: The Waddell Project. Cultural Resources Report 65. Archaeological Consulting Services, Tempe, Arizona.

Guichon, B., and D. Bakewell. 1986. Multiple-Purpose Use of Rights-of-Way in British Columbia. Rangelands, 8(6), December.

Guidance on the Determination of Helicopter Emissions. 2009. Federal Office of Civil Aviation of Switzerland.

Hamilton, S., and G. Schwann. 1995. Do High Voltage Electric Transmission Lines Affect Property Value? Land Economics, 71(4), pp. 436-444.

Hamza, A.H., Shaher A. Mahmoud, N.M. Abdel-Gawad, and Samy M. Ghania. 2005. Evaluation of magnetic induction inside humans at high voltage substations. Electric Power Systems Research, May, Vol. 74, Issue 2, pp. 231-237.

Herndon, Paul. 2003. Letter to Chris Horyza, BLM RE: Bradshaw-Harquahala and Agua Fria National Monument Resource Management Planning Efforts. March 28, 2003.

Hessing, M. B. and C. D. Johnson. 1982. Disturbance and revegetation of Sonoran desert vegetation in an Arizona power line corridor. Journal of Range Management 35(2):254-258.

Hoffmeister, D. F. 1986. Mammals of Arizona. The University of Arizona Press and Arizona Game and Fish Department, 602pp.

Hossam-Eldin, A.; Farag, A.; Madi, I; Karawia, H. 2010. Extremely low frequency magnetic field survey in indoor distribution substation in Egypt. Proceedings of the Universities Power Engineering Conference, 2010, p. 20.

Huckleberry, G. 1994. Surficial geology of the Wittmann and Hieroglyphic Mountains Southwest 7.5' quadrangles, northern Maricopa County, Arizona. Arizona Geological Survey Open-File Report 94-21.

Hunt, W.G., D.E. Driscoll, E.W. Bianchi, and R.E. Jackman. 1992. Ecology of bald eagles in Arizona. BioSystems Analysis, Inc. Santa Cruz, California Volumes A, C. Report to U.S. Bureau of Reclamation, Contract 6-CS-30-04470.

ICNIRP (International Commission on Non-Ionizing Radiation Protection). 2010. Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields (1 Hz - 100 kHz). Health Physics 99(6), pp. 818-836.

ICNIRP (International Commission on Non-Ionizing Radiation Protection). 2001. Review of the Epidemiologic Literature on Electric and Magnetic Fields and Health. Environmental Health Perspectives. December, 109(6), pp. 911-933.

ICNIRP (International Commission on Non-Ionizing Radiation Protection). 1998. Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (Up to 300 GHz). Health Physics Society, April, 74(4), pp. 494-522.

ICNIRP (International Commission on Non-Ionizing Radiation Protection). 1994. Guidelines on Limits of Exposure to Static Magnetic Fields. Health Physics Society, January, 66(1), pp. 100-106.

IEEE (Institute of Electrical and Electronics Engineers). 2002. IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0–3 kHz, IEEE Standard C95.6-2002, October.

IPCC (Intergovernmental Panel on Climate Change). 2007. Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

Jackson, T. 2010. Electric Transmission Lines: Is There An Impact On Rural Land Values? Right of Way, November/December.

Jackson, T., and J. Pitts. 2010. The Effects of Electric Transmission Lines on Property Values: A Literature Review. Journal of Real Estate Literature, pp. 239-259.

Jakus, Paul M. and John E. Keith. 2010. The Welfare Effects of Restricting Off-Highway Vehicle Traffic to Public Lands. Agricultural and Resource Economics, V:39 (2010), Issue 1 (February). Accessed at www.ideqas.repec.org/a/ags/arerj1/59337.html.

JBR Environmental Consultants, Inc. (JBR). 2011. Alternatives Screening Memo. November 7, 2011.

Justus, J. R. and S. R. Fletcher. 2007. Global Climate Change. Nova Science Publishing, Inc.

Keller, Donald R., Arthur W. Vokes, and Darbi M. Rea. 1998. *Archaeological Investigations in the Southern Hieroglyphic Mountains, Maricopa County, Arizona*. Anthropological Research Paper 6. SWCA Environmental Consultant, Flagstaff, Arizona.

Kent, J.A., and K. Priester. 1999. Methods for the Development of Human Geographic Boundaries and Their Uses, in partial completion of Cooperative Agreement No. 1422-P850-A8-0015 between James Kent Associates and the U.S. Department of the Interior, Bureau of Land Management, Task Order No.001. June. <http://www.naturalborders.com/Docs/JKent_MethodsfortheDevelopment.pdf>.

Kheifets, L., A.A. Afifi, and R. Shimkhada. 2006. Public Health Impact of Extremely Low-Frequency Electromagnetic Fields. Environmental Health Perspectives, October, Vol. 114, Issue 10, pp. 1532-1537.

*Kheifets, L. 2001. Electric and magnetic field exposure and brain cancer. *Bioelectromagnetics*, 5, pp. 120-131.Cited in: National Institute of Environmental Health Science. 1999. EMF—Electric and Magnetic Fields Associated with the Use of Electric Power. Sponsored by the NIEHS/DOE EMF RAPID Program.

Khera, Sigrid, and Patricia S. Mariella. 1983. Yavapai: In Handbook of North American Indians, Vol. 10, Southwest, pp38-54 Alfonson Ortiz (ed.). Smithsonian Institution, Washington, D.C.

Kielisch, Kurt C. n.d. Valuation Guidelines for Properties with Electric Transmission Lines.

*Kielisch, Kurt C. 2011. Valuation Guidelines for Properties with Electric Transmission Lines.

Keilisch, Kurt C. 2010. An Impact Study on the Effect of High Voltage Power Lines on Rural Property Value in Southwestern Indiana.

Kielisch, Kurt C. 2006. An Impact Study of a 345kV Electric Transmission Line on Rural Property Value in Marathon County – Wisconsin. April 22, 2006.

Kinnard, W., and S. Dickey. 1995. A Primer on Proximity Impact Research: Residential Property Values Near High-Voltage Transmission Lines. Real Estate Issues, April, pp. 9-23.

Kirvan, Chad V., A.E. (Gene) Rogge, and Kirsten Johnson. 2012. Class III Cultural Resource Survey for the Proposed Sun Valley to Morgan Transmission Line, Maricopa County, Arizona (in preparation). URS, Phoenix, Arizona.

Knapp, T.A., and P.E. Graves. 1989. On the Role of Amenities in Models of Migration and Regional Development. Journal of Regional Science, 29(1) pp. 71-87.

Krause, Mike and Steve Smith. 2006. Methodology to Calculate PM2.5 and PM-2.5 Significance Thresholds. South Coast Air Quality Management District. October.

Kroeger, T., and P. Manalo. 2007. Economic Benefits Provided by Natural Lands: Case Study of California's Mojave Desert. Defenders of Wildlife. <http://www.defenders.org/publications/mojave_economics>.

*Kroll, A., and T. Priestley. 1991. The Effects of Overhead Transmission Lines on Property Values: A Review and Analysis of the Literature. Prepared for the Siting and Environmental Planning Task Force of the Edition Electric Institute, Washington, DC. Cited in: Hamilton, S., and G. Schwann. 1995. Do High Voltage Electric Transmission Lines Affect Property Value? *Land Economics*, 71(4), pp. 436-444.

*Kung, H., and C. Seagle. 1992. Impact of Power Transmission Lines on Property Values: A Case Study. *The Appraisal Journal*, 60(3), pp. 413-18. Cited in: Jackson, T., and J. Pitts. 2010. The Effects of Electric Transmission Lines on Property Values: A Literature Review. *Journal of Real Estate Literature*, pp. 239-259.

LAFB (Luke Air Force Base). 2011. Luke AFB Auxiliary Field #1 Fact Sheet. Available at http://www.luke.af.mil/library/factsheets/factsheet.asp?id=6753. Accessed October 2011.

Landfire. 2012. LANDFIRE is an online tool that can be used to view and download geospatial layers and data products that depict the nation's major ecosystem, wildlife habitat, vegetation or canopy characteristics, landscape features, and wildland fire behavior, effects, and regimes. It can be accessed at: http://www.landfire.gov/.

Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest. U.S. Environmental Protection Agency and U.S. Department of Agriculture/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.

Lindsay, E.H., and N.T. Tessman. 1974. Cenozoic vertebrate localities and faunas in Arizona. Arizona Academy of Science 9:2-34.

Lucas, S.G., and G.S. Morgan. 2005a. Paleogene vertebrate fossil from Arizona. New Mexico Museum of Natural History and Sciences Bulletin 29:114.

Lucas, S.G., and G.S. Morgan. 2005b. Pleistocene mammals of Arizona: an overview. New Mexico Museum of Natural History and Sciences Bulletin 29:153-158.

Ma, Yan, George G. Karady, James R. Hunt, and Bryce L. Priest. 2011. Measurement of high voltage substation generated electromagnetic field. Conference: 2011 IEEE PES Trondheim PowerTech: The Power of Technology for a Sustainable Society, June 19-23.

MAG (Maricopa Association of Governments). 2012. *Congress Designates Interstate 11* in MAGAZine, A Quarterly Newsletter Focusing on Regional Excellence. August – October. Vol. 17: No. 3.

MAG (Maricopa Association of Governments). 2010. Regional Transportation Plan 2010 Update. July.

MAG (Maricopa Association of Governments). 2007. Interstate 10 – Hassayampa Valley Transportation Framework Study. September 26, 2007. http://www.azmag.gov/Documents/pdf/cms.resource/RC_2007_09-26_Hassayampa_PPP37434.pdf.

Maricopa County. n.d. a. McMicken Dam Scenic Corridor Guidelines. http://www.maricopa.gov/planning/resources/plans/docs/pdf/McMicken_Dam_Scenic_Corridor_Design_Guidelines.pdf. October 3, 2011.

Maricopa County. n.d. b. Maricopa County Zoning Ordinance, Chapter 10, Section 1008, Wickenburg Scenic Corridor.

Maricopa County. n.d. c. State Route 74 Scenic Corridor Guidelines. Part of the Maricopa County 2020 Eye to the Future comprehensive plan adopted in 1997. Phoenix, Arizona.

Maricopa County. 2012. Maricopa County Zoning Ordinance. Maricopa County Planning and Development Department. Phoenix, Arizona.

Maricopa County. 2011. Maricopa County Annual Report.

Maricopa County. 2006. Noise Ordinance (P-23), http://www.maricopa.gov/planning/Resources/Ordinances/NoiseOrdinance.aspx. Planning and Development Department.

Maricopa County. 2004. Maricopa County Regional Trail Plan. http://www.maricopa.gov/parks/MaricopaTrail/pdf/TrailPlan.pdf. Accessed on October 12, 2011.

Maricopa County. 2002. Maricopa County Comprehensive Plan 1997, revised 2002. http://www.maricopa.gov/planning/Resources/Plans/docs/pdf/ Comprehensive%20Plan.pdf. Accessed on October 10, 2011.

Maricopa County. 2000. White Tank/Grand Avenue Area Plan. December 6, 2000. http://www.maricopa.gov/planning/Resources/Plans/docs/pdf/whitetanks_6-21-07.pdf

MCAQD (Maricopa County Air Quality Department). 2011. 2010 Air Monitoring Network Review. MCAQD Air Monitoring Division.

MCAQD (Maricopa County Air Quality Department). 2008. Periodic Emissions Inventory Report.

MCAQD (Maricopa County Air Quality Department). 2005. Periodic Emissions Inventory Report.

McCord, R.D. II. 2011. Paleontological Records and Literature Search for Sun Valley to Morgan 500/230kV Project, Maricopa County, Arizona. Submitted to URS Corporation, San Diego, California.

McCord, R.D. II. 1994. Fossil tortoises of Arizona. Fossils of Arizona 2:83-89, Proceedings 1994 Southwest Paleontology Society and Mesa Southwest Museum.

McGranahan, D. 1999. “Natural Amenities Drive Population Change.” U.S. Department of Agriculture Economic Research Service. Agricultural Economics, Report #781.

Mead, J.I. 2005. Late Pleistocene (Rancholabrean) amphibians and reptiles of Arizona. New Mexico Museum of Natural History and Sciences Bulletin 29:137-152.

Minnesota IMPLAN Group. 2009. IMPLAN Pro software system.

Montgomery, E.L., and J.W. Harshbarger. 1989. Arizona Hydrogeology and Water Supply. in J. P. Jenny and S. J. Reynolds (editors). Geologic Evolution of Arizona. Arizona Geological Society Digest 17. pp. 827-840.

Morgan, G.S., and R.S. White, Jr. 2005. Miocene and Pliocene vertebrates from Arizona. New Mexico Museum of Natural History and Sciences Bulletin 29:115-136.

Mueser, P.R., and P.E. Graves. 1995. Examining the Role of Economic Opportunity and Amenities in Explaining Population Redistribution. Journal of Urban Economics, 37(2) pp. 176-200.

Nailen, Richard L. 2009. "Environmental concerns may restrict use of insulating gases." Electrical Apparatus. FindArticles.com. Accessed July 21, 2010. http://findarticles.com/articles/mi_qa3726/is_199904/ai_n8836851/.

National Geophysical Data Center. 2011. Estimated Values of Magnetic Field Properties. http://www.ngdc.noaa.gov/geomagmodels/struts/igrfGridZipE.

National Weather Service Forecast Office. 2009. Phoenix Monthly Precipitation 1896 to Present. 2009. http://www.wrh.noaa.gov/psr/climate/ (accessed October 30, 2009).

NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: September 2011).

NERC (North American Electric Reliability Corporation). 2011. NERC Website. http://www.nerc.com. September 8, 2011.

Nickens, P.R., S.L. Larralde, and G.C. Tucker. 1981. A Survey of Vandalism to Archaeological Resources in Southwestern Colorado. Cultural Resource Series 11. Bureau of Land Management, Denver, Colorado.

NIEHS (National Institute of Environmental Health Sciences). 2002. EMF: Electric and Magnetic Fields Associated with the Use of Electric Power. Questions and Answers. June, http://www.niehs.nih.gov/emfrapid.

NIEHS (National Institute of Environmental Health Sciences). 1999a. Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields, Olden, K. NIH Publication No. 99-4493, May 4.

NIEHS (National Institute of Environmental Health Sciences). 1999b. EMF—Electric and Magnetic Fields Associated with the Use of Electric Power. Sponsored by the NIEHS/DOE EMF RAPID Program.

NIEHS (National Institute of Environmental Health Sciences). 1998. Working Group Report. Assessment of Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields. Portier, C.; Wolfe, M. Brooklyn Park, Minnesota, June 16-24.

NRCS (Natural Resources Conservation Service). 2011. Soil Data Mart, http://soildatamart.nrcs.usda.gov. Accessed August 30, 2011.

NRCS (Natural Resources Conservation Service). 2002. Soil Shrink/Swell Potential, Greater Phoenix Area map. January 11, 2002.

Outdoor Industry Foundation. 2010. The Active Outdoor Recreation Economy. www.outdoorindustry.org.

Pasenko, M.R. 2007. A subadult Stegomastodon (Mammalia, Proboscidea) skull from central Arizona. PaleoBios 27:81-85.

Patterson, R.M., T.D. Bracken, and J. Sahl, ACGIH. 1998. Assessing EMF in the Workplace: A Guide for Industrial Hygienists, Publication 9853.

Pearthree, P.A., A. Youberg, J.J. Field, C.A. Ferguson, and J.E. Spencer. 2004. Geologic map of the Daggs Tank 7.5' quadrangle, Maricopa County, Arizona. Arizona Geological Survey Digital Geologic Map 39.

Pitts, J., and T. Jackson. 2007. Power Lines and Property Values Revisited. The Appraisal Journal, (Fall) pp. 323-325.

*Priestley, T., and G. Evans. 1996. Resident Perceptions of a Nearby Electric Transmission Line. *Journal of Environmental Psychology*, 16, pp. 65-74. Cited in: Jackson, T., and J. Pitts. 2010. The Effects of Electric Transmission Lines on Property Values: A Literature Review. *Journal of Real Estate Literature*, pp. 239-259.

Proline Utility Technologies. n.d. Material Safety Data Sheet: Sulfur Hexafluoride.

Public Service Commission of Wisconsin. 2011. Environmental Impacts of Transmission Lines. <psc.wi.gov>.

Rahman, Nazaruddin Abdul, and Wan Norliza B. Mahadi. 2009. Measurements and simulations on ELF-EMF magnetic field exposures from multiple electric transmission lines. International Journal of Emerging Electric Power Systems, 10(4).

Raz, Amir. 2006. Ask the Brains. Scientific American Mind, Vol. 17 Issue 4, p. 82.

Real Estate Appraisal Litigation LLC. n.d. Continental Ranch, Tucson, AZ Study.

Reynolds, T. D., T. D. Rich, and D. A. Stephens. 1999. Sage Thrasher (*Oreoscoptes montanus)*, The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/463.

*Rhodeside & Harwell, Inc. 1988. Perceptions of power lines: residents' attitudes. Prepared for Virginia Power. Cited in: Goodrich-Mahoney, J. 2003. Transmission Line and Property Values: State of the Science. EPRI, November.

*Rigdon, G. 1991. 138kV Transmission Lines and the Value of Recreational Land. *Right of Way*, pp. 8-19. Cited in: Jackson, T., and J. Pitts. 2010. The Effects of Electric Transmission Lines on Property Values: A Literature Review. *Journal of Real Estate Literature*, pp. 239-259.

Rodgers, James B., and Nancy Dallett. 2000, A Selected Sample of Prehistoric and Historic Sites of the Western Salt River Valley, Arizona. Scientific Archeological Services, Phoenix, Arizona.

Rogge, A.E. (Gene) and Chad V. Kirvan. 2013. Preliminary Report Of Supplemental Cultural Resource Survey For The Proposed Sun Valley To Morgan Transmission Line, Maricopa County, Arizona. URS Cultural Resource Report 2013-18(AZ). URS Corporation, Phoenix, Arizona. April.

Rogge, A.E. (Gene), Kirsten Johnson, and Ronald S. Savage. 2011. Class III Cultural Resource Survey Research Design for the Proposed Sun Valley to Morgan Transmission Line, Maricopa County, Arizona. Revised. Cultural Resources Report 2011-5(AZ). URS, Phoenix, Arizona.

Rogge, A.E. (Gene) and Kirsten Erickson. 2007. A Cultural Resource Constraints Analysis for the Arizona Public Service TS-5 to TS-9 500-Kilovolt Transmission Line, Maricopa County, Arizona. Cultural Resources Report 2007-43(AZ). URS, Phoenix, Arizona.

Rolling, John D and Kevin Biller. 2006. The Impact of 345 Kv Electric Transmision Lines on Rural Land Values. An Analysis of Sales Prices in Four Central and Northern Wisconsin Counties 2000-2005. July 27, 2006.

Ruediger, B., and J. D. Lloyd. 2003. A rapid assessment protocol for identifying potential habitat linkages along roads. Pages 205-225 in C.L. Irwin, P. Garrett, and K. P. McDermott, eds. Proceedings of the 2003 International Conference on Ecology and Transportation. Center for Transportation and the Environment, North Carolina State University, Raleigh, North Carolina, 21pp.

San Segundo, H., and V. Fuster Roig. 2008. Reduction of low voltage power cables electromagnetic field emission in MV/LV substations. Electric Power Systems Research, June, Vol. 78 Issue 6, pp. 1080-1088.

Saunders, S., C. Montgomery, T. Easley, and T. Spencer. 2008. Hotter and Drier: The West's Changed Climate. The Rocky Mountain Climate Organization, Natural Resources Defense Council.

SCAQMD (South Coast Air Quality Management District). 2008. Emission Factors for Heavy Duty Vehicles. Emissions Handbook, Appendix H, Form EIA 1605.

SCAQMD (South Coast Air Quality Management District). 1993. Emission Factors for Heavy Duty Vehicles. Emissions Handbook, Appendix H, Form EIA 1605.

SCENIHR (Scientific Committee on Emerging and Newly Identified Health Risks). 2008. Possible effects of Electromagnetic Fields (EMF) on Human Health – Opinion of the Scientific Committee on Emerging and Newly Identified Health Risks. Toxicology, April, Vol. 246, Issue 2/3, pp. 248-250.

Schlobohm and Brain. 2002. Gaining an Understanding of the National Fire Danger Rating System, A publication of the NWCG Fire Danger Working Team, July 2002.

Scott, Joe H., and Robert E. Burgan. 2005. Standard Fire Behavior Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model. General Technical Report RMRS-GTR-153. Fort Collins, Colorado: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. June.

SCS (Soil Conservation Service). 1986. Soil Survey of Aquila-Carefree Area, parts of Maricopa and Pinal Counties, Arizona. Prepared in cooperation with U.S. Department of the Interior, Bureau of Indian Affairs, Bureau of Land Management, and the Arizona Agricultural Experiment Station. April 1986,

SCS (Soil Conservation Service). 1972. Soil Survey of Maricopa County, Arizona, Central Part. By George W. Hartman in corporation with the University of Arizona Agricultural Experiment Station.

SCTEE (Scientific Committee on Toxicity, Ecotoxicity and the Environment). 2001. Opinion on Possible effects of Electromagnetic Fields (EMF), Radio Frequency Fields (RF) and Microwave Radiation on human health, Expressed at the 27th CSTEE plenary meeting, Brussels, October 30, 2001.

Sellers, W.D., and R.H. Hill (editors). 1974. Arizona climate, 1931–1972: Tucson, Arizona, University of Arizona Press, 616 p.

Selvam, R., K. Ganesan, R. Narayana, A.C. Gangadharan, B.M. Manohar, and R. Puvanakrishnan. 2007. Low frequency and low intensity pulsed electromagnetic field exerts its antiinflammatory effect through restoration of plasma membrane calcium ATPase activity. Life Sciences, June, Vol. 80, Issue 26, pp. 2403-2410.

Sheppard, Paul R., Andrew C. Comrie, Gregory D. Packin, Kurt Angersbach, and Malcolm K. Hughes. 2002. *The climate of the US Southwest.* Climate Research 21 (July): 219-238.

Shrieve Chemical Products Company. n.d. Material Safety Data Sheet: Alkylaryl Hydrocarbon.

Silberman, J., and K. Andereck. 2006. The economic value of off-highway vehicle recreation. Journal of Leisure Research, 38(2), pp. 208-223. Cited in Jakus, P., et al. 2010. The Welfare Effects of Restricting Off-Highway Vehicle Access to Public Lands. Agricultural and Resource Economics Review, 39(1), pp. 89-100.

Simms, S.R. 1986. Cultural Resource Investigations in Southeastern Utah to Aid in the Assessment of Archaeological Vandalism. Submitted to U.S. Department of Agriculture, Forest Service, Salt Lake City and Monticello, Utah. Archaeological Technician Program, Weber State College, Logan, Utah.

Singh, B.K., R.S. Sharma, R. Ajumeera, and A.K. Mathur. 2008. Electromagnetic Fields in Environment and Its Health Hazards. Proceedings of the International Conference on Microwaves, IEEE 978-1-4244-2690-4444, pp. 558-560.

*Solum, C.L. 1985. Transmission Line Easement Effect on Rural Land in Northwest Wisconsin. *Right of Way*, April, pp. 8-14. Cited in: Jackson, T., and J. Pitts. 2010. The Effects of Electric Transmission Lines on Property Values: A Literature Review. *Journal of Real Estate Literature*, pp. 239-259.

Southwest ReGAP. 2004. USGS National Gap Analysis Program. Provisional Digital Land Cover Map for the Southwestern United States. Version 1.0. RS/GIS Laboratory, College of Natural Resources, Utah State University.

Spangler, Jerry D. 2006. Site Condition and Vandalism Assessment of Archaeological Sites, Lower and Middle Arch Canyon. Colorado Plateau Archaeological Alliance, Ogden, Utah.

Spangler, Jerry D., Shannon Arnold, and Joel Boomgarden. 2006. Chasing Ghosts: A GIS Analysis and Photographic Comparison of Vandalism and Site Degradation in Range Creek Canyon, Utah. Occasional Papers 2006-1. Utah Museum of Natural History, Salt Lake City, Utah.

Spencer, J.E., and S.J. Reynolds. 1989. Middle Tertiary tectonics of Arizona and adjacent areas. in J. P. Jenny and S. J. Reynolds (editors). Geologic Evolution of Arizona. Arizona Geological Society Digest 17. pp. 539–583.

Starwood Solar I LLC. 2009. Application for a Certificate of Environmental Compatibility – Starwood Solar I Project, Exhibit I, September 2009, http://starwoodsolar.com/cecapplication.aspx. Last accessed December 8, 2011.

State of Arizona. 2009. Letter from Governor Jan Brewer to US EPA Region IX regarding Arizona's 8-hour Ozone Area Recommendations, dated March 12, 2009. http://www.azdeq.gov/environ/air/plan/download/FINAL%20GovBrewer03Desig3-12-09.pdf. Accessed October 2011.

Stokes, Robert J. (editor). 2011. Phase 2 Data Recovery Investigation at AZ T:4:150(ASM), a Multicomponent Hohokam Yavapai, and Euroamerican Rockshelter Site at Lake Pleasant Regional Park, Yavapai County, Arizona. Cultural Resources Report 148. Archaeological Consulting Services, Tempe, Arizona.

SVP (Society of Vertebrate Paleontology). 1996. Conditions of receivership for paleontological salvage collections: Society of Vertebrate Paleontology News Bulletin, No. 166, pp. 31-32.

SVP (Society of Vertebrate Paleontology). 1995. Assessment and mitigation of adverse impacts to nonrenewable paleontological resources: standard guidelines: Society of Vertebrate Paleontology New Bulletin, No. 163. pp. 22-27.

SWBEMC (Southwestern Bald Eagle Management Committee). 2011. Arizona Yearly Nestwatch Program Summary Reports. Available at: http://www.swbemc.org/, Accessed: November 2011.

Telles, Carol, and Kathleen McConnell. 2000. Artifact Assemblages of Yavapai Sites in the Agua Fria River Valley, Yavapai and Maricopa Counties, Arizona. In Archaeology in West-Central Arizona: Proceedings of the 1996 Arizona Archaeological Council Prescott Conference, edited by Thomas N. Motsinger, Douglas R. Mitchell, and James M. McKie, pp. 215-226. Sharlot Hall Museum Press, Prescott, Arizona.

Tenenbaum, D.J. 2000. A New View of ELF-EMFs: Are They Linked With Cancer-Promotion? Environmental Health Perspectives, 108(10), October, A469.

Tikhonova, G.I., N.B. Rubtsova, E.A. Novokhatskaya, and A.V. Tikhonov. 2003. Remote effects of occupational and non-occupational exposure to electromagnetic fields of power-line frequency. Radiatsionnaya Biologiya. Radioekologiya, 43(5), pp. 555-558.

Totten, Arthur and Dickerson, Bill, et al. 1998. Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses.

Town of Buckeye. 2008. Buckeye General Plan. Town of Buckeye Planning Department. http://www.buckeyeaz.gov/DocumentView.aspx?DID=142. Accessed on October 17, 2011.

Tukimin, R., W.N.L. Mahadi, M.Y.M. Ali, and M.N.M. Thari. 2007. Extremely Low Frequency Electromagnetic Field (ELF EMF) Survey of Residential Areas Around Transmission Lines. Asia-Pacific Conference on Applied Electromagnetics Proceedings, December 4-6, Melaka, Malaysia.

U.S. Census Bureau. 2012a. 2010 Census Interactive Population Search, accessed online March 11, 2012, at http://2010.census.gov/2010census/popmap/ipmtext.php?fl=04.

U.S. Census Bureau. 2012b. Poverty Thresholds for 2009 by Size of Family and Number of Related Children under 18 Years.

U.S. Census Bureau. 2010a. Analysis of American Community Survey, 2010 Estimates.

U.S. Census Bureau. 2010b. U.S. Census Bureau Delivers Arizona's 2010 Census Population Totals, Including First Look at Race and Hispanic Origin Data for Legislative Redistricting. http://www.census.gov/newsroom/releases/archives/2010_census/cb11-cn76.html. Accessed October 2011.

U.S. Census Bureau. 2006-2010. Analysis of American Community Survey 2006-2010 Estimates. U.S. Census Bureau.

U.S. Census Bureau. 2005-2009. Analysis of American Community Survey 2005-2009 Estimates.

U.S. Census Bureau. 2005. Interim State Population Projections Analysis of U.S. Census Bureau Population Division.

U.S. Census Bureau. 2000. Analysis of U.S. Census Bureau.

U.S. DOT FTA (U.S. Department of Transportation, Federal Transit Administration). 2006. FTA-VA-90-1003-06, Transit Noise and Vibration Impact Assessment. Prepared under contract by Harris, Miller, Miller, and Hanson, Burlington, Massachusetts.

U.S. Energy Information Administration. 2009. Emissions of Greenhouse Gases Report. Internet Website: http://www.eia.gov/oiaf/1605/ggrptlcarbon.html. Accessed on July 9, 2011.

U.S. Energy Information Administration. 2007. Instructions for Form EIA-1605. Appendix H Fuel Emission Factors.

USFS (U.S. Forest Service). 2006. Antelope-Pardee 500-kV Transmission Project EIR/EIS, Appendix 1, Alternatives Screening Report.

U.S. Global Change Research Program. 2010. Regional Climate Information: Southwest. http://www.globalchange.gov/publications/reports/scientific-assessments/us-mpacts/regionalclimate-change-impacts/southwest. Accessed March 26, 2010.

University of Arizona, Non-point Education for Municipal Officials. 2011. "Best Management Practices – Soil Erosion," http://nemo.srnr.arizona.edu/nemo/index_old.php?page=bmperosion. Accessed November 7, 2011.

URS (URS Corporation). 2013a. Preliminary Jurisdictional Delineation Report for Arizona Public Service Sun Valley to Morgan 500/230kV Transmission Line Project. Corps File Number: SPL-2012-857-RJD. April 4, 2013.

URS (URS Corporation). 2013b. Arizona Public Service Sun Valley to Morgan 500/230kV Transmission Line Project Impact Assessment Model for Waters of the United States. Letter Report to Mr. Richard Stuhan, Arizona Public Service dated April 17, 2013.

URS (URS Corporation). 2013c. Arizona Public Service Sun Valley to Morgan 500/230kV Transmission Line Project Supplemental Impact Assessment Model for Waters of the United States. Letter Report to Mr. Richard Stuhan, Arizona Public Service dated May 1, 2013.

URS (URS Corporation). 2012a. Environmental Resource Report for Land Use, Recreation, and Special Designations. February.

URS (URS Corporation). 2012b. Environmental Resource Report for Air Quality and Climate Change. February.

URS (URS Corporation). 2012c. Addendum to the Environmental Resource Report for Geology, Minerals, and Soils. Sun Valley to Morgan 500/230kV Transmission Line Project. April 2012.

URS (URS Corporation). 2012d. Environmental Resource Report for Hazardous Materials and Hazardous and Solid Waste. Sun Valley to Morgan 500/230kV Transmission Line Project. February 2012.

URS (URS Corporation). 2012e. Environmental Resource Report for Public Health and Safety, Sun Valley to Morgan 500/230kV Transmission Line Project. February 2012.

URS (URS Corporation). 2012f. Environmental Resource Report for Paleontology, Sun Valley to Morgan 500/230kV Transmission Line Project. February 2012.

URS (URS Corporation). 2012g. Environmental Resource Report for Socioeconomics and Environmental Justice, Sun Valley to Morgan 500/230kV Transmission Line Project. February 2012.

URS (URS Corporation). 2012h. Environmental Resource Report for Transportation and Traffic, Sun Valley to Morgan 500/230kV Transmission Line Project. February 2012.

URS (URS Corporation). 2012i. Environmental Resource Report for Biological Resources. February 2012.

URS (URS Corporation). 2012j. Environmental Resource Report for Visual Resources. Sun Valley to Morgan 500/230kV Transmission Line Project. 2012.

URS (URS Corporation). 2012k. Environmental Resource Report for Water Resources. Sun Valley to Morgan 500/230kV Transmission Line Project. 2012.

URS (URS Corporation). 2012l. Draft Desktop Jurisdictional Evaluation. Sun Valley to Morgan 500/230kV Transmission Line Project. January.

URS (URS Corporation). 2010. Arizona Department of Transportation Final Feasibility Report – SR 74 Right-of-Way Preservation. May.

URS (URS Corporation). 2009. Maricopa Association of Governments (MAG) Grand Avenue Commuter Rail Corridor Development Plan – Rail Line Inventory. July.

URS (URS Corporation). 2008. TS-5 to TS-9 500/230kV Transmission Line Project, Application for a Certificate of Environmental Compatibility, Exhibit I. July.

USFWS (U.S. Fish & Wildlife Service). 2011. Maricopa County species list. Arizona Ecological Services Office, Phoenix, Arizona, Revised, August 22, 2011, 7pp.

USFWS (U.S. Fish and Wildlife Service). 2008a. Guidelines for Raptor Conservation in the Western United States. February 2008.

USFWS (U.S. Fish and Wildlife Service). 2008b. Birds of conservation concern. Division of Migratory Bird Management, Arlington, Virginia, 93pp.

USGS (U.S. Geological Survey). 2012. *Mineral Commodity Summaries 2012*. 198 pages. Reston, VA. January.

USGS (U.S. Geological Survey). 2011. Mineral Resource Data System. - http://tin.er.usgs.gov/mrds/. November 10, 2011.

USGS (U.S. Geological Survey). 2007. Southwest exotic plant information clearinghouse (SWEPIC). Southwest Biological Science Center, and Southwest Exotic Plant Mapping Program. Data and information available at: http://sbsc.wr.usgs.gov/research/Projects/swepic/swepic.asp, accessed: September 2011.

USGS (U.S. Geological Survey). 2004. Provisional Digital Land Cover Map for the Southwestern United States. Version 1.0. National Gap Analysis Program. RS/GIS Laboratory, College of Natural Resources, Utah State University.

USGS (U.S. Geological Survey). 1999. Desert restoration: do something or wait a thousand years. Mojave Desert Science Symposium (Restoration and Recovery), presentation abstract. USGS WERC Projects. Las Vegas, February 25-27, 1999. Available online at: http://www.werc.usgs.gov/Project.aspx?ProjectID=216.

USGS (U.S. Geological Survey). 1970. "Arizona Earthquake History," abridged from Earthquake Information Bulletin, Volume 2, Number 3, May-June. http://earthquake.usgs.gov/earthquakes/states/arizona/history.php. Accessed September 23, 2011.

Wallace, A., E. M. Romney, and R. B. Hunter. 1981. The challenge of a desert: revegetation of disturbed desert lands. Great Basin Naturalist Memoirs 4:216-230.

Walters, E. L., E. H. Miller and P. E. Lowther. 2002. Red-naped Sapsucker (Sphyrapicus nuchalis), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/663b.

WECC (Western Electric Coordinating Council). 2009. Bylaws of the Western Electric Coordinating Council.

WECC (Western Electric Coordinating Council). 2008. System Performance Criteria, TPL – (001 thru 004). April 18, 2008.

Weiss, J. L, and J. T. Overpeck. 2005. *Is the Sonoran Desert losing its cool?* Global Change Biology II, no. 12: 2065-2077.

Westerling, A L., H. G. Hidalgo, D. R. Cayan, and T. W. Swetnam. 2006. *Farming and earlier spring increase western US forest wildfire activity.* Science 313, no. 5789, August: 940-943.

Western Regional Climate Center. 2011a. Arizona Climate Summaries. Website accessed on October 21, 2011. http://www.wrcc.dri.edu/summary/climsmaz.html.

Western Regional Climate Center. 2011b. Western U.S. Historical Climate Summaries from the Western U.S. Coop Station Map, Arizona Coop Numbers 029464 and 020660. http://www.wrcc.dri.edu. Accessed October 2011.

Wilson, E.D., and R.T. Moore. 1959. Geologic map of Arizona. Arizona Bureau of Mines.

Wilson, E.D., R.T. Moore, and H.W. Pierce. 1957. Geologic map of Maricopa County, Arizona. Arizona Geological Survey.

Wolverton, M., and S. Bottemiller. 2003. Further Analysis of Transmission Line Impact on Residential Property Values. The Appraisal Journal, pp. 244-252.

World Health Organization. 2004. Electromagnetic Hypersensitivity. Proceedings, International Workshop on EMF Hypersensitivity, Prague, Czech Republic, October 25-27, editors, Kjell Hansson Mild, Mike Repacholi, Emilie van Deventer, and Paolo Ravazzani.

WRAP (Western Regional Air Partnership) Fugitive Dust Handbook. 2006. Countess Environmental, WGA Contract No. 30204-111.

Wu, N. 2005. Environmental Law Centre, Regulating Power Line EMF Exposure: International Precedents, April 22.

Zorzi, C., C. Dall'Oca, R. Cadossi, and S. Setti. 2007. Effects of pulsed electromagnetic fields on patients' recovery after arthroscopic surgery: prospective, randomized and double-blind study. Knee Surgery, Sports Traumatology, Arthroscopy, July, 15(7), pp. 830-834.

*Findings from these references are summarized in other references listed and were not collected individually.

7.2 ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
$\mu g/m^3$	Micrograms per cubic meter
µPa	Micropascals
µT	Microtesla
AADT	Annual Average Daily Traffic
AC	Alternating Current
ACC	Arizona Corporation Commission
ACEC	Area of Critical Environmental Concern
ACGIH	American Conference of Governmental Industrial Hygienists
ACS	American Community Survey
ADA	Arizona Department of Agriculture
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AFB	Air Force Base
AG	General Agriculture
AGFD	Arizona Game and Fish Department
AIRFA	American Indian Religious Freedom Act
ALERT	Automated Local Evaluation in Real Time
A/m	Amps per T
Alt.	Alternative
AMA	Aquifer Management Area
amsl	Above Mean Sea Level
ANSI	American National Standards Institute
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
Applicant	Arizona Public Service
APS	Arizona Public Service
APZ	Accident Protection Zone
ARPA	Archaeological Resources Protection Act
ARS	Arizona Revised Statutes

Acronym/Abbreviation	Definition
asl	Above Sea Level
ASLD	Arizona State Land Department
ASM	Arizona State Museum
ASU	Arizona State University
ATV	All-Terrain Vehicle
AUM	Animal Unit Month
AZGS	Arizona Geological Survey
AZMNH	Arizona Museum of Natural History
AZNM	Arizona-New Mexico
AZPDES	Arizona Pollution Discharge Elimination System
AZSITE	Arizona Archaeological Site and Survey Database
BGA	Bald and Golden Eagle Protection Act
bhp	Brake Horsepower
BLM	Bureau of Land Management
BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe Railway
C2	Intermediate Commercial
CAA	Clean Air Act
CAP	Central Arizona Project
CAWCD	Central Arizona Water Conservancy District
CBP	Concrete Batch Plants
CCSP	U.S. Climate Change Science Program
CEC	Certificate of Environmental Compatibility
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGTL	Compressed Gas Insulated Transmission Lines
CH_4	Methane
CIA	Cumulative Impacts Area
CNEL	Community Noise Equivalent Level

Acronym/Abbreviation	Definition
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide Equivalent
CSWP	Crushing, screening, and wash plants
CWA	Clean Water Act
dB	Decibel
dBA	A-Weighting Decibel
DC	Direct Current
DLCO	Desert Lands Conservation Ordinance
DOI	Department of the Interior
DOT	U.S. Department of Transportation
du	Dwelling Units
eGRID	Emissions and Generation Resource Integrated Database
EHV	Extra High Voltage
EIA	U.S. Energy Information Administration
EIS	Environmental Impact Statement
EJ	Environmental Justice
ELF	Extremely Low Frequencies
EM	Electromagnetic
EMF	Electromagnetic Frequency
EO	Executive Order
EPA	Environmental Protection Agency
EPMs	Environmental Protection Measures
EPR	Ethylene Propylene Rubber
ERP	Emergency Response Plan
ESA	Endangered Species Act
ESRI	Environmental Systems Research Institute
EU	European Union
f	Frequency
°F	Degrees Fahrenheit
FAA	Federal Aviation Administration

Acronym/Abbreviation	Definition
FBPS	Fire Behavior Prediction System
FCC	Federal Communications Commission
FCDMC	Flood Control District of Maricopa County
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Policy and Management Act
FMU	Fire Management Unit
FP	Flood Plain
ft	Feet
FTA	Federal Transit Authority
G	Gauss
GAO	General Accounting Office
GHG	Greenhouse Gas
GHz	Gigahertz
GIS	Geographic Information System
gpm	Gallons per Minute
GWP	Global Warming Potential
GWSI	Groundwater Site Inventory
H&S	Health and Safety
HAPs	Hazardous Air Pollutants
HDDV	Heavy Duty Diesel Vehicle
HDGV	Heavy Duty Gasoline Vehicle
HDMS	Heritage Database Management System
HFO	Hassayampa Field Office
HOV	High-Occupancy Vehicle
HPFF	High Pressure Fluid-Filled
HRU	Human Resource Unit
HSA	Highly Safeguarded Plant in Arizona
HUD	Department of Housing and Urban Development
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz

Acronym/Abbreviation	Definition
I	Interstate
IBC	International Building Code
IBLA	Interior Board of Land Appeals
ICC	International Code Council
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IDT	Interdisciplinary Team
IEEE	Institute of Electrical and Electronics Engineers
IM	Instruction Memorandum
IPCC	Intergovernmental Panel on Climate Change
IR	Infrared
IVM	Integrated Vegetation Management
kcmil	1000 circular mills
kHz	Kilohertz
KOP	Key Observation Point
kV	Kilovolt
LAFB	Luke Air Force Base
LDDT	Light Duty Diesel Truck
LDDV	Light Duty Diesel Vehicle
LDGT12	Light Duty Gasoline Truck (less than 6000 lbs)
LDGT34	Light Duty Gasoline Truck (greater than 6000 lbs)
LDGV	Light Duty Gasoline Vehicle
Ldn	Day-Night Sound Level
Leq	Energy mean dBA
LiDAR	Light Detection and Ranging
Lmax	Maximum Leq
Lmin	Minimum Leq
LORS	Laws, Ordinances, Regulations and Standards
LR2000	Legacy Rehost 2000 System
LT	Long Term
LTO	Landing/Take-off
LUST	Leaking Underground Storage Tank

Acronym/Abbreviation	Definition
LWCF	Land and Water Conservation Fund
m	meter
MAG	Maricopa Association of Governments
MCAQD	Maricopa County Air Quality Department
MCMWCD1	Maricopa County Municipal Water Conservation District #1
mG	milliGauss
MHz	Megahertz
MMBtu	Million British Thermal Unit
MNA	Museum of Northern Arizona
Mo	Month
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MRI	Midwest Research Institute
MSA	Metropolitan Statistical Area
MSW	Municipal Solid Waste
mT	milliTesla
Mtns	Mountains
MVD	Motor Vehicle Division
MW	Megawatt
MWh	Megawatt hour
N_2O	Nitrous Oxide
n/a	Not Applicable
n.d.	No Date
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NCA	Noise Control Act
NED	National Elevation Dataset
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NFDRS	National Fire Danger Rating System

Acronym/Abbreviation	Definition
NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental Health Sciences
NISC	National Invasive Species Council
NO_2	Nitrogen Dioxide
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NO_X	Nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NSR	New Source Review
O_3	Ozone
OBCF	Octave Band Center Frequency
OD OPGW	Outside Diameter Optical Ground Wire
OHV	Off Highway Vehicle
OSHA	Occupational Safety and Health Act
P.A.	Proposed Action
PAD	Planned Area Development
Pb	Lead
PCD	Planned Community Development
PFYC	Potential Fossil Yield Classification
PJD	Preliminary Jurisdictional Delineation
PILT	Payments in Lieu of Taxes
PL	Public Law
PM_{10}	Particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$	Particulate matter equal to or less than 2.5 microns in diameter
POD	Plan of Development
POU	Places of Use
PPA	Pollution Prevention Act
ppm	Parts Per Million
ppmv	Part Per Million by Volume

Acronym/Abbreviation	Definition
Project	APS Sun Valley to Morgan 500/230kV Transmission Line Project
PROST	City of Peoria Parks, Recreation, Open Space, and Trails Master Plan
PSD	Prevention of Significant Deterioration
psig	Per square inch gage
PUD	Planned Unit Development Option
PV-WW	Palo Verde to Westwing
PWL	Sound Power Level (Lq)
Q	Surficial Deposits
Qo	Older Surficial Deposits
RCRA	Resource Conservation and Recovery Act
RFRA	Religious Freedom Restoration Act
RI	Radio Interference
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
RMZ	Resource Management Zone
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
ROW	Right-of-way
RTP	Regional Transportation Plan
S	Sensitive
SC	Species of Concern
SAFETEA	Safe, Accountable, Flexible, Efficient Transportation Equity Act
SCAQMD	South Coast Air Quality Management District
SCFF	Self-Contained Fluid-Filled
SCS	Soil Conservation Service
SDWA	Safe Drinking Water Act
SF6	Sulphur Hexaflouride
SHPO	State Historic Preservation Office
SI ICE	Spark Ignition Internal Combustion Engines
SIP	State Implementation Plan

Acronym/Abbreviation	Definition
SO_2	Sulfur Dioxide
SPL	Sound Pressure Level (Lp)
SQRU	Scenic Quality Rating Unit
SR	State Route
SRA	Salvage Restricted Area
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
ST	Short Term
SU	Special Use
SWAP	State Wildlife Action Plan
SWPPP	Stormwater Pollution Prevention Plan
T	Tesla
Tb	Basaltic Rocks
TERR	Territories
TI	Television Interference
TMDL	Total Maximum Daily Load
TNW	Traditional Navigable Water
tpy	Tons Per Year
Tsm	Sedimentary Rocks (Middle Miocene to Obligocene)
Tsy	Sedimentary Rocks (Pliocene to middle Miocene)
Tv	Volcanic Rocks
TVMP	Transmission Vegetation Management Program
TWA	Time-weighted Average
UNK	Unknown Status
US	United States
U.S.	United States
UBC	Universal Building Code
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USC	United States Code
USDA	U.S. Department of Agriculture

Acronym/Abbreviation	Definition
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
V/m	Volts per Meter
VOC	Volatile Organic Compound
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WAPA	Western Area Power Administration
WECC	Western Electricity Coordinating Council
WHO	World Health Organization
WRAP	Western Regional Air Partnership
WSCA	Wildlife of Special Concern in Arizona
WUI	Wildland Urban Interface
XLPE	Cross-Linked Polyethylene
Xms	Metamorphic Rocks
Xmv	Metavolcanics
yr	Year

7.3 GLOSSARY

Administrative Route. A designated road, primitive road or trail on BLM-managed public lands that is limited to BLM-authorized official use. Official use is defined in 43 CFR 8340 as, "Use by an employee, agent, or designated representative of the Federal Government or one of its contractors, in the course of his employment, agency, or representation."

Air Quality. A measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

Alluvial. Pertaining to material or processes associated with transportation or deposition of soil and rock by flowing water (e.g., streams and rivers).

Alluvium. Soil and rock deposited by flowing water (e.g., streams and rivers); consists of unconsolidated deposits of sediment, such as silt, sand, and gravel.

Alternative. Any one of a number of options for a project.

Ambient. Surrounding, existing, background conditions.

Animal unit month (AUM). The amount of forage necessary to sustain one cow and one calf (e.g., a 1,000-pound cow and calf) for a period of one month.

Annual (ecology). A plant that completes its development in one year or one season and then dies.

Anthropogenic (climate change/global warming). Resulting from or produced by human beings.

Aquatic. Growing or living in or near the water.

Aquifer. A water-bearing rock unit (unconsolidated or bedrock) that will yield water in a usable quantity to a well or spring.

Archaeological site. A discrete location that provides physical evidence of past human use.

Archaeology. The scientific study of the life and culture of past, especially ancient, peoples, as by excavation of ancient cities, relics, artifacts, etc.

Area of Critical Environmental Concern (ACEC). A BLM designation pertaining to areas where specific management attention is needed to protect and prevent irreparable damage to important historical, cultural, and scenic values, fish or wildlife resources, or other natural systems or processes, or to protect human life and safety from natural hazards.

Arroyo. A dry gully, or a stream in a dry region.

Artifact. Any object showing human workmanship or modification, especially from a prehistoric or historic culture.

Backfill. The excavated material (soil and/or rock) used to refill a hole/trench created during construction activities (i.e., drilling foundation holes). The excavated material used to fill a hole/trench in the groundbed (i.e., structure foundations). The composition of the backfill varies based on the soil type at the excavation site and the component being covered.

Background (visual). That portion of the visual landscape lying from the outer limit of the middleground to infinity. Color and texture are subdued in this area, and visual sensitivity analysis here is primarily concerned with the two-dimensional shape of landforms against the sky.

Basic Elements (visual). The four major elements (form, line, color, and texture) that determine how the character of a landscape is perceived.

Baseline. The existing conditions against which impacts of the proposed action and its alternatives can be compared.

Basin. A depressed area having no surface outlet (topographic basin); a physiographic feature or subsurface structure that is capable of collecting, storing, or discharging water by reason of its shape and the characteristics of its confining material (water); a depression in the earth's surface, the lowest part often filled by a lake or pond (lake basin); a part of a river or canal widened (drainage, river, stream basin).

Best Management Practices (BMPs). Vegetative and structural methods to control erosion and sedimentation.

Big Game. Large species of wildlife that are hunted (such as elk, mule deer, and pronghorn antelope).

Butte. A steep hill standing alone in a plain.

Candidate Species. A plant or animal species not yet officially listed as threatened or endangered under the Endangered Species Act, but which is undergoing status review by the U.S. Fish and Wildlife Service.

Centerline Access Route. An access route through the ROW created during construction, with continued use after construction for line inspection and repair. Although the route is referred to as the "centerline" access, the actual route may not always follow the centerline of the transmission line.

Clean Air Act of 1990. Federal legislation governing air pollution. The Clean Air Act established National Ambient Air Quality Standards for carbon monoxide, nitrogen oxide, ozone, particulate matter, sulfur dioxide, and lead. Prevention of Significant Deterioration classifications define the allowable increased levels of air quality deterioration above legally established levels and include the following:

Class I – minimal additional deterioration in air quality (certain national parks and wilderness areas)

Class II – moderate additional deterioration in air quality (most lands)

Class III – greater deterioration for planned maximum growth (industrial areas)

Clean Water Act of 1987. National environmental law enforced by the U.S. Environmental Protection Agency that regulates water pollution.

Contrast (visual). The effect of a striking difference in form, line, color, or texture of the landscape features within the area being viewed.

Cooperating Agency. Assists the lead federal agency in developing an environmental assessment or environmental impact statement. The Council on Environmental Quality regulations implementing NEPA define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Any federal, state, or local government jurisdiction with such qualification may become a cooperating agency by agreement with the lead agency.

Council on Environmental Quality (CEQ). An advisory council to the President established by the National Environmental Policy Act of 1969. It reviews federal programs for their effort on environmental studies and advises the President on environmental matters.

Cubic feet per second (CFS). Unit of discharge, or volume rate of flow, equal to 0.0283 cubic meters per second. As a rate of streamflow, a cubic foot of water passing a referenced section in one second. A measure of a moving volume of water.

Cultural Resources. Remains of human activity, occupation, or endeavor as reflected in districts, sites, buildings, objects, artifacts, ruins, works of art, architecture, and natural features important in human events.

Cumulative effect (or impact). As defined in the CEQ Regulations at §1508.7, the cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. These impacts may result from individually minor but collectively significant actions taking place over a period of time.

dBA. The sound pressure levels in decibels measured with a frequency weighing network corresponding to the A-scale on a standard sound level meter. The A-scale tends to suppress lower frequencies (e.g., below 1,000 Hz).

Decibel (dB). One-tenth of a Bel is a measure on a logarithmic scale that indicates the ratio between two sound powers. A ratio of 2 in power corresponds to a difference of 3 decibels between two sounds. The decibel is the basic unit of sound measure.

Developed property. For purposes of this analysis, the term "developed property" is defined to mean property that has been developed for residential, commercial, recreation, or other uses and contains the required infrastructures for those uses. This definition also includes all the required infrastructure needed for lots to be home sites and are marketed as such, including things such as roads and utilities.

Direct effect. See effect.

Discharge. Outflow of surface water in a stream or canal (water). Discharge from an industrial facility that may contain pollutants harmful to fish or animals if it is released into nearby water bodies usually requires a permit issued by the U.S. Environmental Protection Agency and is monitored.

Displacement. When one or more wildlife individual abandons a habitat because the habitat is no longer suitable, and must seek out alternative habitat, which may or may not be adjacent. If the abandonment of habitat is caused by a disturbance, wildlife individuals may or may not return to the habitat after the disturbance is no longer present.

Drainage. The natural or artificial removal of surface water and groundwater from a given area. Many agricultural soils need drainage to improve production or to manage water supplies.

Easement. A right afforded to a person, agency, or organization to make limited use of another's real property for access or other purposes.

Ecology. The relationship between living organisms and their environment.

Effect (impact). A modification of the existing environment as it presently exists, caused by an action (such as construction or operation of facilities). An effect may be direct, indirect, or cumulative. The terms effect and impact are synonymous under the NEPA.

A direct effect is caused by an action and occurs at the same time and same place (40 CFR 1508.8(a)).

An indirect effect is caused by the action later in time or farther removed in distance, but is still reasonably foreseeable (40 CFR 1508.8(b)). Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water or other natural systems including ecosystems.

Emission. Effluent discharged into the atmosphere, usually specified by mass per unit time, and considered when analyzing air quality.

Endangered Species. Species in danger of extinction throughout all or a significant portion of its range. Endangered species are rarely identified by the Secretary of the Interior in accordance with the Endangered Species Act of 1973.

Endangered Species Act (ESA) of 1973. Provides a means whereby the ecosystems upon which threatened and endangered species depend may be conserved and to provide a program for the conservation of such threatened and endangered species. The ESA requires all federal agencies to seek to conserve threatened and endangered species, use applicable authorities in furtherance of the purposes of the ESA, and avoid jeopardizing the continued existence of any species that is listed or proposed for listing as threatened and endangered or destroying or adversely modifying its designated or proposed critical habitat. The U.S. Fish and Wildlife Service is responsible for administration of this act.

Environmental Impact Statement (EIS). A document prepared to analyze the impacts on the environment of a proposed action and released to the public for review and comment. An EIS must meet the requirements of NEPA, CEQ, and the directives of the agency responsible for the proposed action.

Environmental Justice. The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies (see Executive Order 12898).

Ephemeral stream (wash, creek, waterbody). A stream or portion of a stream which flows briefly in direct response to precipitation in the immediate vicinity, and whose channel is at all times above the water table.

Erosion. The wearing away of the land surface by running water, wind, ice, or other geological agents and by such processes as "gravitation creep."

Federal Land Policy and Management Act of 1976 (FLPMA). Public Law 94-579 signed by the President on October 21, 1976. Established public land policy for management of lands administered by the Bureau of Land Management (BLM). FLPMA specifies several key directions for the BLM, notably: (1) management on the basis of multiple use and sustained yield; (2) land use plans prepared to guide management actions; (3) public lands for the protection, development, and enhancement of resources; (4) public lands retained in federal ownership; and (5) public participation used in reaching management decisions.

Federal Register. Published by the Office of the Federal Register, National Archives, and Records Administration, the *Federal Register* is the official daily publication for rules, proposed rules, and notices of federal agencies and organizations, as well as executive orders and other presidential documents.

Floodplain. The low and relatively flat areas adjacent to rivers and streams. A 100-year floodplain is that area subject to a 1 percent or greater chance of flooding in any given year.

Forage. Vegetation used for food by wildlife, particularly big game wildlife and domestic livestock.

Foreground (visual). The visible area from a viewpoint or use area out to a distance of 0.5 mile. The ability to perceive detail in a landscape is greatest in this zone.

Forbs. Any herbaceous plant other than a grass.

Fossil. Any remains, trace, or imprint of a plant or animal that has been preserved by natural process in the earth's crust since some past geologic time.

Game Species. Animals commonly hunted for food or sport.

Geographic Information System (GIS). A system of computer hardware, software, data, people, and applications that capture, store, edit, analyze, and graphically display a potentially wide array of geospatial information.

Geology. The science that relates to the earth, the rocks of which it is composed, and the changes that the earth has undergone or is undergoing.

Geothermal Resource. Heat found in rocks and fluids at various depths within the earth's crust that can be extracted by drilling or pumping for use as an energy source. This heat may be residual heat, friction heat, or a result of radioactive decay.

Global Warming. An increase in the average temperature of the earth's atmosphere and oceans. The term is also used to describe the theory that increasing temperatures are the result of a strengthening greenhouse effect caused primarily by manmade increases in carbon dioxide and other greenhouse gases.

Greenhouse Gases (GHGs). The warming of the earth and its atmosphere through the trapping of heat from the sun by gases, known as greenhouse gases, in the earth's atmosphere.

Groundwater. Subsurface water that fills available openings in rock or soil materials to the extent that they are considered water saturated.

Habitat. A specific set of physical conditions in a geographic area(s) that surrounds a single species, group of species, or large community. In wildlife management, the major components of habitat are food, water, cover, and living space.

Hydrology. The study of the movement, distribution, and quality of water throughout the earth, addresses both the hydrologic cycle and water resources.

Hydric Soils. Soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation.

Hydrographic basin (area, region, unit). A geographic area drained by a single major stream or an area consisting of a drainage system comprised of streams and often natural or man-made lakes. See also basin.

Hydrophytic Vegetation. The total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.

Impact. See effect.

Indirect effect. See effect.

Infrastructure. The facilities, services, and equipment needed for a community or facility to function, such as and including roads, sewers, water lines, and electric lines.

Intermittent. A river or stream that flows for a period of time, usually seasonally during rainy periods, and stops during dry periods. In arid regions, dry periods may be interrupted by occasional flash floods from brief but intense rain storms.

Invasive Species. Describes a large number of non-native plant species whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Key Observation Point (KOP). An observer position on a travel route used to determine visible area.

Kilovolt (kV). A unit of power equivalent to 1,000 volts (A volt is a measure of electrical potential difference that would cause a current of 1 ampere to flow through a conductor whose resistance is 1 ohm).

Labor Force. All persons 16 years of age or over who are either employed or unemployed and actively looking for a job.

Landform. A term used to describe the many land surfaces that exist as a result of geologic activity and weathering (e.g., plateaus, mountains, plains, and valleys).

Land Use Plan. The organized direction or management of the use of lands and their resources to best meet human needs over time, according to the land's capabilities.

Lands that are Part of the Natural Landscape. For purposes of this analysis, this term is defined as lands that are not developed property or undeveloped land and are not presently planned for development.

Laydown Area. An area where construction material and equipment are staged during a construction operation.

Lease. An authorization or contract by which one party (lessor) conveys the use of property to another (lessee) in return for rental payments. In cases of resource production, lessees pay royalties to the lessor in addition to rental payments.

Lithic. Pertaining to stone or a stone tool (for example, lithic artifact).

Megawatt (MW). A unit for measuring power equal to one million watts. The productive capacity of electrical generators is measured in megawatts.

Mesa. An isolated, nearly level land mass, formed on nearly horizontal rocks, standing above the surrounding country and bounded with steep sides.

Mitigation. Actions to avoid, minimize, reduce, eliminate, replace, or rectify the impact of a management practice.

Multiuse Utility Corridor. See **Utility Corridor**. A utility corridor designated by the BLM that may accommodate multiple linear utility ROWs for the purpose of consolidating future compatible uses in a discrete area to reduce resource impacts.

National Ambient Air Quality Standards (NAAQS). The allowable concentrations of air pollutants in the air specified by the federal government and established by the Clean Air Act. The air quality standards are divided into primary standards (based on the air quality criteria and allowing an adequate margin of safety and requisite to protect the public health) and secondary standards (based on the air quality criteria and allowing an adequate margin of safety and requisite to protect the public welfare) from any unknown or expected adverse effects of air pollutants.

National Environmental Policy Act (NEPA) of 1969. Our nation's basic charter for protection of the environment. It establishes policy, sets goals, and provides means for carrying out the policy. In accordance with NEPA, all federal agencies must prepare a written statement on the environmental impacts of a proposed action. The provisions to ensure that federal agencies act according to the letter and spirit of NEPA are the CEQ regulations for implementing NEPA 943 CFR 1500-1508).

National Register of Historic Places. A listing, maintained by the Secretary of the Interior, of districts, sites, buildings, structures, and objects worthy of preservation. To be eligible a property must normally be at least 50 years old, unless it has exceptional significance, and have national, state, or local significance in American history, architecture, archaeology, engineering, or culture; and possess integrity of location, design, setting, material, workmanship, feeling, and association; and (a) be associated with events that have made a significant contribution to the broad pattern of history, (b) be associated with the lives of persons significant to our past, (c) embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values; or represent a significant and distinguishable entity whose components may lack individual distinction; or (d) have yielded, or may be likely to yield, information important to prehistory or history.

Negligible (impact). Unless otherwise specified, "negligible" shall mean impacts of such a small scale such as to be non-measureable.

Non-attainment Area. An air quality control region (or portion thereof) in which the U.S. Environmental Protection Agency has determined that ambient air concentrations exceed national ambient air quality standards for one or more criteria pollutants.

Noxious Weed. Nonnative plant species that negatively impact crops, native plant communities, and/or management of natural or agricultural systems. Noxious weeds are officially designated by a number of states and federal agencies.

Palliatives. In this application, a material used to bind the layers of surface soil to each other, to prevent them from becoming windblown dust, or rising into the atmosphere as a result of some other type of disturbance (i.e., vehicle or equipment traffic).

Perennial (ecology). A plant whose root remains alive more than two years.

Perennial Stream. A stream that flows throughout the year and from source to mouth.

$PM_{2.5}$. Particulate matter less than 2.5 microns in aerodynamic diameter.

PM_{10}. Particulate matter less than 10 microns in aerodynamic diameter.

Prime Farmland. A special category of highly productive cropland that is recognized and described by the U.S. Department of Agriculture's Soil Conservation Service and receives special protection under the Surface Mining Law of 1977.

Project Area. The area of land which the project would encompass.

Public Land. Land or interest in land owned by the United States and administered through agencies such as the BLM and USBR without regard to how the United States acquired ownership, except lands on the Outer Continental Shelf, and land held in trust for the benefit of American Indians, Aleuts, and Eskimos.

Range. A large, open area of land over which livestock can wander and graze.

Raptor. A bird of prey (e.g., eagles, hawks, falcons, and owls).

Reclamation. Restoration of land disturbed by natural or human activity (e.g., mining, pipeline construction) to original contour, use, or condition. Also describes the return of land to alternative uses that may, under certain circumstance, be different from those prior to disturbance.

Recontouring. Return a land surface to or near to its original form through earth-moving equipment such as front-end loaders, backhoes, hand rakes, hoes, shovels, etc.

Record of Decision. A document separate from, but associated with an EIS that publicly and officially discloses the responsible official's decision on a proposed action.

Revegetation. The reestablishment and development of self-sustaining plant cover. On disturbed sites, this normally requires human assistance such as reseeding.

Right-of-way. Land authorized to be used or occupied for the construction, operation, maintenance, and termination of a project, such as a road or utility.

Riparian. Situated on or pertaining to the bank of a river, stream, or other body of water. Riparian is normally used to refer to plants of all types that grow along streams, rivers, or at spring and seep sites.

Resource Management Plan. Document that establishes direction for the use of resources to best meet the needs of humans over time, according to the resource potential or capability.

Scoping. Procedures by which agencies determine the extent of analysis necessary for a proposed action (i.e., the range of actions, alternatives, and impacts to be addressed; identification of significant issues related to a proposed action; and the depth of environmental analysis, data, and task assignments needed).

Sediment. Solid fragmental material, either mineral or organic, that is transported or deposited by air, water, gravity, or ice.

Sedimentation. The result when soil or mineral is transported by moving water, wind, gravity, or glaciers and deposited in streams or other bodies of water, or on land. Also, letting solids settle out of wastewater by gravity during treatment.

Sensitive Species. Those plant or animal species that are susceptible or vulnerable to activity impacts or habitat alterations.

Single-use Utility Corridor. See **Utility Corridor**. A utility corridor designated by the BLM to accommodate one specific ROW to reduce resource impacts. Additional ROWs within the corridor could not be authorized without an RMP amendment changing the corridor designation.

Special Status Species. Wildlife and plant species either federally listed or proposed for listing as endangered or threatened; state-listed; or priority species of concern to federal agencies or tribes.

Substation. A facility where electrical voltage is either increased or decreased through the use of transformers; electric lines are interconnected at one or more voltage; and electric power is metered and regulated to provide safe and stable voltage for end-use customers.

Traditional Cultural Property. A Traditional Cultural Property (TCP), as defined in the NHPA, is a property that is eligible for inclusion on the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. Stated another way, a significant TCP is defined as a property with significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices.

Transportation Corridor. A BLM- designated corridor that would reduce resource impacts while allowing for linear ROWs for development of new transportation routes or expansion of existing roads within the designated corridor. However, corridor designation does not automatically result in authorization of requested ROWs within the corridor. Each requested

ROW would require environmental analysis and evaluation of compatibility of the proposed ROW with any existing ROWs within the corridor.

Threatened Species. Any species of plant or animal which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Undertaking. A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those requiring a federal permit, license, or approval; and those subject to state or local regulation administered pursuant to a delegation or approval of a federal agency.

Undeveloped Land. For purposes of this analysis, the term "undeveloped land" is defined to mean land that does not have existing residential or commercial buildings, facilities, or uses. Undeveloped land may be private lands that are part of a master planned community that is not yet fully developed to include residential or commercial facilities or uses, and may be in varying stages of planning or preparation for development.

Utility Corridor. Designated through land use planning to promote compatible, systematic and predictable development on federal lands to expedite permitting and reduce impacts to natural, economic and cultural resources from linear ROWs. However, corridor designation does not automatically result in authorization of requested ROWs within the corridor. Each requested ROW would require environmental analysis and evaluation of compatibility of the proposed ROW with any existing ROWs within the corridor.

Vegetation communities. Species of plants that commonly live together in the same region or ecotone.

View-shed. Visible portion of the specific landscape seen from a specific viewpoint, normally limited by landform, vegetation, distance, and existing cultural modifications.

Visibility. The distance to which an observer can distinguish objects from their background. The determinants of visibility include the characteristics of the target object (shape, size, color, pattern), the angle and intensity of sunlight, the observer's eyesight, and any screening present between the viewer and the object (i.e., vegetation, landform, even pollution such as regional haze).

Visual Resource Management (VRM) Classes. Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes, each of which has an objective that prescribes the amount of change allowed in the characteristic landscape.

Waters of the United States. All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce including adjacent wetlands and tributaries to water of the United States; and all waters by which the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce.

Watershed. Drainage basin for which surface water flows to a single point.

Wetlands. Areas inundated by surface water or groundwater with a frequency sufficient to support vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

Wilderness. An area formally designated by Congress as part of the National Wilderness Preservation System.

7.4 INDEX

Agua Fria River, 1-23, 2-5, 2-33, 2-87, 3-22, 3-24, 3-25, 3-26, 3-27, 3-29, 3-36, 3-37, 3-39, 3-52, 3-90, 3-123, 3-130, 3-132, 3-133, 3-134, 3-136, 3-137, 3-150, 3-151, 3-160, 3-163, 3-164, 3-165, 3-167, 3-168, 3-170, 3-171, 3-172, 3-173, 3-174, 3-176, 3-179, 3-182, 3-184, 3-186, 3-187, 3-188, 3-189, 3-190, 3-191, 3-192, 3-193, 3-194, 4-26, 4-31, 4-142, 4-150, 4-187, 4-189, 4-192, 4-193, 4-195, 4-200, 4-201, 4-202, 4-203, 4-205, 4-206, 4-207, 4-243, 5-8, 6-45, 6-98, 6-99, 6-116, 6-118, 2A-1, 4B-14, 4B-27, 4B-28

Air Quality and Climate Change, 1-23, 2-23, 2-71, 2-85, 3-2, 3-5, 3-8, 3-10, 3-11, 3-16, 3-17, 3-39, 4-4, 4-7, 4-15, 4-17, 4-21, 4-22, 4-24, 4-83, 4-90, 4-104, 4-105, 4-211, 4-215, 4-219, 4-222, 4-224, 4-225, 5-7, 5-11, 5-12, 6-2, 6-57, 6-66, 6-79, 6-90

Alternative 1: Proposed Action with Additional Corridor, 1-3, 2-1, 2-25, 2-26, 2-71, 2-72, 2-73, 2-74, 2-75, 2-76, 2-77, 2-78, 2-79, 2-80, 2-81, 2-82, 2-83, 2-87, 3-28, 3-29, 3-45, 3-47, 3-106, 3-130, 3-146, 3-147, 3-148, 3-153, 3-154, 3-167, 3-190, 3-191, 4-3, 4-14, 4-15, 4-29, 4-31, 4-35, 4-41, 4-48, 4-50, 4-51, 4-54, 4-55, 4-59, 4-60, 4-69, 4-75, 4-85, 4-96, 4-102, 4-105, 4-106, 4-116, 4-128, 4-137, 4-144, 4-168, 4-181, 4-182, 4-183, 4-184, 4-185, 4-186, 4-192, 4-194, 4-195, 4-206, 4-227, 4-232, 4-244, 4-248, 4-250, 6-16, 6-22, 6-29, 6-34, 6-36, 6-46, 6-61, 6-72, 6-73, 6-75, 6-86, 6-116, 6-119, 6-129, 6-138

Alternative 2: ROW South of SR 74, 1-3, 2-1, 2-26, 2-27, 2-43, 2-64, 2-71, 2-72, 2-73, 2-74, 2-75, 2-76, 2-77, 2-78, 2-79, 2-80, 2-81, 2-82, 2-83, 2-87, 3-25, 3-26, 3-29, 3-106, 3-130, 3-146, 3-148, 3-153, 3-154, 3-155, 3-167, 3-179, 3-187, 3-188, 3-190, 3-191, 4-4, 4-16, 4-17, 4-29, 4-31, 4-36, 4-42, 4-48, 4-50, 4-51, 4-54, 4-55, 4-60, 4-61, 4-62, 4-63, 4-70, 4-76, 4-85, 4-86, 4-87, 4-88, 4-96, 4-102, 4-107, 4-108, 4-109, 4-110, 4-111, 4-113, 4-116, 4-121, 4-129, 4-137, 4-145, 4-168, 4-169, 4-170, 4-171, 4-172, 4-173, 4-175, 4-176, 4-181, 4-182, 4-183, 4-184, 4-185, 4-186, 4-193, 4-195, 4-206, 4-227, 4-232, 4-244, 4-246, 4-247, 4-248, 6-2, 6-14, 6-16, 6-18, 6-28, 6-43, 6-46, 6-51, 6-52, 6-54, 6-61, 6-68, 6-69, 6-70, 6-71, 6-74, 6-75, 6-78, 6-81, 6-82, 6-83, 6-84, 6-108, 6-111, 6-115, 6-116, 6-124, 6-127, 6-134, 6-135, 6-136, 6-137, 6-138, 6-149

Alternative 3: Carefree Highway Route, 1-3, 2-1, 2-28, 2-29, 2-32, 2-43, 2-58, 2-59, 2-60, 2-63, 2-71, 2-72, 2-73, 2-74, 2-75, 2-76, 2-77, 2-78, 2-79, 2-80, 2-81, 2-82, 2-83, 3-29, 3-47, 3-48, 3-105, 3-106, 3-130, 3-155, 3-156, 3-167, 3-179, 3-189, 3-191, 4-18, 4-19, 4-29, 4-36, 4-42, 4-48, 4-50, 4-51, 4-54, 4-55, 4-62, 4-63, 4-70, 4-71, 4-76, 4-87, 4-88, 4-89, 4-90, 4-96, 4-102, 4-111, 4-112, 4-113, 4-114, 4-115, 4-116, 4-124, 4-129, 4-134, 4-137, 4-145, 4-173, 4-174, 4-175, 4-176, 4-181, 4-182, 4-183, 4-184, 4-185, 4-194, 4-195, 4-207, 4-248, 6-2, 6-5, 6-8, 6-28, 6-43, 6-52, 6-53, 6-54, 6-68, 6-69, 6-70, 6-71, 6-74, 6-78, 6-81, 6-82, 6-83, 6-84, 6-87, 6-110, 6-111, 6-119, 6-124, 6-134, 6-135, 6-136, 6-137, 6-142

Area of Critical Environmental Concern (ACEC), 3-52, 4-221, 6-89, 4B-21

Arizona Corporation Commission (ACC), 1-2, 1-3, 1-4, 1-5, 1-6, 1-7, 1-12, 1-17, 1-19, 1-24, 2-2, 2-3, 2-5, 2-25, 2-26, 2-28, 2-30, 2-31, 2-32, 2-33, 2-34, 2-35, 2-36, 2-38, 2-41, 2-42, 2-43, 2-47, 2-56, 2-57, 2-59, 2-64, 2-66, 2-73, 2-87, 2-88, 2-93, 2-97, 3-25, 3-46, 3-48, 3-50, 3-52, 3-53, 3-54, 3-57, 3-58, 3-59, 3-60, 3-62, 3-65, 3-66, 3-72, 3-83, 3-87, 3-88, 3-91, 3-92, 3-106, 3-119, 3-125, 3-130, 3-137, 3-160, 3-163, 3-191, 4-31, 4-52, 4-58, 4-61, 4-62, 4-64, 4-72, 4-107, 4-111, 4-125, 4-136, 4-158, 4-179, 4-230, 4-243, 5-2, 5-6, 5-7, 6-

5, 6-6, 6-10, 6-13, 6-14, 6-18, 6-19, 6-20, 6-21, 6-22, 6-24, 6-25, 6-26, 6-29, 6-39, 6-40, 6-42, 6-43, 6-47, 6-48, 6-50, 6-51, 6-55, 6-58, 6-72, 6-74, 6-75, 6-79, 6-80, 6-83, 6-84, 6-85, 6-87, 6-109, 6-111, 6-116, 6-119, 6-133, 6-142, 6-148, 4B-27

Arizona State Land Department, 1-5, 1-8, 1-12, 1-17, 2-5, 2-14, 2-29, 2-30, 2-87, 3-1, 3-20, 3-48, 3-52, 3-54, 3-55, 3-56, 3-64, 3-104, 3-106, 3-137, 3-141, 3-170, 3-171, 3-172, 3-173, 4-25, 4-26, 4-31, 4-58, 4-59, 4-61, 4-62, 4-64, 4-94, 4-95, 4-102, 4-110, 4-116, 4-119, 4-226, 4-230, 5-7, 5-8, 6-10, 6-13, 6-31, 6-47, 6-78, 6-80, 6-87, 6-112, 6-120, 6-121, 6-122, 6-152, 2A-5

Baldy Mountain Resource Management Zone (RMZ), 3-93, 3-97, 4-80, 4-81, 6-104, 4B-17

Bradshaw-Harquahala Resource Management Plan (RMP), 1-1, 1-4, 1-5, 1-7, 1-9, 1-10, 1-11, 1-24, 1-25, 1-26, 2-3, 2-26, 2-31, 2-55, 2-57, 2-60, 2-68, 2-71, 2-73, 2-97, 2-98, 3-28, 3-52, 3-53, 3-58, 3-84, 3-99, 3-127, 3-139, 4-3, 4-4, 4-21, 4-31, 4-34, 4-37, 4-42, 4-56, 4-57, 4-59, 4-60, 4-61, 4-64, 4-65, 4-72, 4-76, 4-82, 4-83, 4-86, 4-89, 4-124, 4-130, 4-138, 4-145, 4-157, 4-168, 4-179, 4-196, 4-208, 4-241, 4-242, 5-10, 6-10, 6-15, 6-16, 6-65, 6-78, 6-79, 6-86

Bureau of Land Management (BLM), 1-1, 1-3, 1-4, 1-5, 1-7, 1-8, 1-9, 1-10, 1-11, 1-12, 1-15, 1-16, 1-18, 1-19, 1-20, 1-21, 1-22, 1-24, 1-25, 1-26, 1-27, 2-1, 2-2, 2-3, 2-4, 2-5, 2-6, 2-7, 2-9, 2-10, 2-12, 2-13, 2-14, 2-15, 2-17, 2-19, 2-20, 2-24, 2-25, 2-26, 2-28, 2-29, 2-30, 2-31, 2-37, 2-45, 2-55, 2-56, 2-57, 2-66, 2-67, 2-74, 2-78, 2-81, 2-83, 2-87, 2-89, 2-90, 2-91, 2-92, 2-93, 2-94, 2-95, 2-96, 2-97, 2-98, 3-14, 3-17, 3-19, 3-21, 3-25, 3-26, 3-28, 3-29, 3-32, 3-33, 3-35, 3-37, 3-38, 3-39, 3-43, 3-44, 3-45, 3-47, 3-51, 3-52, 3-53, 3-57, 3-58, 3-60, 3-61, 3-63, 3-64, 3-72, 3-83, 3-84, 3-85, 3-86, 3-88, 3-92, 3-93, 3-96, 3-97, 3-98, 3-99, 3-107, 3-108, 3-110, 3-111, 3-112, 3-118, 3-127, 3-133, 3-135, 3-136, 3-137, 3-138, 3-139, 3-140, 3-141, 3-142, 3-144, 3-147, 3-148, 3-150, 3-154, 3-156, 3-157, 3-158, 3-160, 3-163, 3-170, 3-173, 3-174, 3-179, 3-182, 3-183, 3-185, 3-186, 3-187, 3-188, 3-190, 4-3, 4-4, 4-5, 4-15, 4-17, 4-21, 4-25, 4-26, 4-28, 4-29, 4-31, 4-33, 4-34, 4-35, 4-37, 4-42, 4-45, 4-46, 4-47, 4-48, 4-49, 4-50, 4-51, 4-52, 4-53, 4-54, 4-55, 4-56, 4-57, 4-58, 4-59, 4-60, 4-61, 4-62, 4-63, 4-64, 4-66, 4-72, 4-76, 4-77, 4-78, 4-79, 4-80, 4-81, 4-82, 4-83, 4-84, 4-85, 4-86, 4-87, 4-88, 4-89, 4-90, 4-94, 4-95, 4-103, 4-104, 4-105, 4-106, 4-111, 4-112, 4-116, 4-120, 4-124, 4-125, 4-128, 4-129, 4-130, 4-131, 4-136, 4-138, 4-144, 4-145, 4-146, 4-147, 4-148, 4-149, 4-150, 4-152, 4-153, 4-156, 4-157, 4-159, 4-160, 4-161, 4-162, 4-164, 4-165, 4-167, 4-168, 4-169, 4-170, 4-171, 4-172, 4-173, 4-174, 4-175, 4-176, 4-178, 4-179, 4-180, 4-181, 4-182, 4-186, 4-192, 4-193, 4-194, 4-196, 4-199, 4-204, 4-205, 4-206, 4-208, 4-209, 4-210, 4-212, 4-214, 4-217, 4-221, 4-222, 4-226, 4-230, 4-231, 4-232, 4-235, 4-236, 4-237, 4-240, 4-241, 4-242, 4-244, 4-247, 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-8, 5-9, 5-10, 5-11, 6-1, 6-5, 6-6, 6-7, 6-8, 6-9, 6-10, 6-11, 6-12, 6-13, 6-14, 6-15, 6-16, 6-17, 6-18, 6-19, 6-20, 6-21, 6-22, 6-23, 6-24, 6-25, 6-26, 6-27, 6-28, 6-29, 6-30, 6-31, 6-32, 6-33, 6-34, 6-35, 6-36, 6-37, 6-38, 6-39, 6-40, 6-41, 6-42, 6-43, 6-44, 6-45, 6-46, 6-47, 6-48, 6-49, 6-50, 6-51, 6-52, 6-53, 6-54, 6-55, 6-56, 6-57, 6-58, 6-59, 6-60, 6-61, 6-62, 6-63, 6-64, 6-65, 6-66, 6-67, 6-68, 6-69, 6-70, 6-71, 6-72, 6-73, 6-74, 6-75, 6-76, 6-77, 6-78, 6-79, 6-80, 6-81, 6-82, 6-83, 6-84, 6-85, 6-86, 6-87, 6-88, 6-89, 6-90, 6-91, 6-92, 6-93, 6-94, 6-95, 6-96, 6-97, 6-98, 6-99, 6-100, 6-101, 6-102, 6-103, 6-104, 6-105, 6-106, 6-107, 6-108, 6-109, 6-110, 6-111, 6-112, 6-113, 6-114, 6-115, 6-116, 6-117, 6-118, 6-119, 6-120, 6-121,

6-122, 6-123, 6-124, 6-125, 6-126, 6-127, 6-128, 6-129, 6-130, 6-131, 6-132, 6-133, 6-134, 6-135, 6-136, 6-137, 6-138, 6-139, 6-140, 6-141, 6-142, 6-143, 6-144, 6-145, 6-146, 6-147, 6-148, 6-149, 6-150, 6-151, 6-152, 6-153, 6-154, 6-155, 6-156, 6-157, 6-158, 6-159, 6-160, 6-161, 2A-1, 2A-2, 2A-3, 2A-4, 2A-5, 2A-6, 2A-7, 2A-8, 2A-9, 2A-11, 2A-12, 2A-13, 2A-14, 2A-15, 4B-9, 4B-10, 4B-14, 4B-15, 4B-19, 4B-20, 4B-26

Castle Hot Springs Special Recreation Management Area (SRMA), 2-75, 2-78, 2-81, 2-94, 3-92, 3-93, 3-97, 3-107, 3-146, 3-147, 3-148, 3-149, 3-151, 3-154, 4-56, 4-57, 4-59, 4-60, 4-61, 4-62, 4-80, 4-81, 4-82, 4-83, 4-84, 4-85, 4-86, 4-87, 4-111, 4-116, 4-160, 4-161, 4-162, 4-164, 4-165, 4-169, 4-170, 4-171, 4-175, 4-176, 4-178, 4-180, 4-183, 4-221, 4-236, 4-237, 4-244, 4-247, 4-248, 6-3, 6-71, 6-104, 6-144, 6-145, 6-147, 6-148, 6-151, 6-156, 6-159, 4B-16, 4B-17

Central Arizona Project (CAP), 1-5, 1-16, 1-17, 1-24, 2-5, 2-33, 2-35, 2-36, 2-37, 2-38, 2-39, 2-40, 2-41, 2-42, 2-43, 2-47, 2-49, 2-56, 2-57, 2-61, 2-66, 3-25, 3-27, 3-29, 3-35, 3-36, 3-37, 3-52, 3-53, 3-54, 3-60, 3-61, 3-132, 3-141, 3-142, 3-156, 3-157, 3-164, 3-166, 3-167, 3-194, 4-26, 4-27, 4-52, 4-101, 4-156, 4-174, 4-188, 4-189, 4-190, 4-204, 4-230, 6-23, 6-32, 6-45, 6-129, 6-131, 4B-14, 4B-27, 4B-28

City of Peoria, 1-1, 1-3, 1-4, 1-5, 1-6, 1-8, 1-11, 1-12, 1-18, 2-32, 2-33, 2-40, 2-74, 2-82, 3-36, 3-56, 3-57, 3-58, 3-61, 3-62, 3-65, 3-126, 3-137, 3-178, 4-47, 4-52, 4-58, 4-61, 4-63, 4-83, 4-85, 4-87, 4-88, 4-89, 4-90, 4-107, 4-112, 4-125, 4-149, 4-156, 4-168, 4-173, 4-176, 4-178, 4-185, 4-230, 4-231, 5-2, 5-7, 5-8, 6-10, 6-15, 6-17, 6-18, 6-19, 6-20, 6-21, 6-26, 6-27, 6-36, 6-39, 6-43, 6-50, 6-58, 6-59, 6-65, 6-66, 6-67, 6-68, 6-70, 6-72, 6-80, 6-82, 6-85, 6-89, 6-91, 6-124, 6-125, 6-126, 6-127, 6-128, 6-129, 6-130, 6-131, 6-132, 6-133, 6-134, 6-135, 6-136, 6-139, 6-142, 6-144, 6-146, 6-149, 6-155, 4B-1, 4B-10, 4B-11, 4B-12, 4B-17, 14B-8, 4B-19, 4B-23

City of Surprise, 1-6, 1-8, 1-11, 1-12, 2-30, 2-74, 3-55, 3-57, 3-62, 3-95, 3-126, 4-52, 4-83, 4-85, 4-87, 4-88, 4-107, 4-112, 4-125, 4-230, 4-231, 5-7, 5-8, 6-9, 6-43, 6-138, 6-149, 4B-1, 4B-10, 4B-11, 4B-12, 4B-13, 4B-25

Climate Change, 3-6, 3-12, 3-13, 3-14, 3-15, 3-16, 3-39, 4-4, 4-10, 4-14, 4-15, 4-17, 4-22, 4-215, 4-225, 5-11, 6-2, 6-95, 6-96, 6-100

Cultural Resources, 1-11, 1-17, 2-9, 2-34, 2-35, 2-43, 2-72, 2-87, 3-2, 3-18, 3-20, 3-21, 3-25, 3-26, 3-30, 3-35, 3-36, 3-94, 3-95, 4-4, 4-24, 4-25, 4-26, 4-29, 4-30, 4-31, 4-32, 4-211, 4-215, 4-220, 4-222, 4-224, 4-226, 4-227, 4-228, 4-233, 5-8, 5-11, 5-13, 6-2, 6-79, 6-90, 6-107, 6-112, 6-115, 6-118, 6-119, 6-120, 6-121, 6-123, 6-124, 2A-4, 2A-5, 2A-14

Cumulative Impacts, 1-25, 1-27, 3-20, 4-4, 4-11, 4-85, 4-98, 4-113, 4-219, 4-220, 4-221, 4-225, 4-227, 4-229, 4-233, 4-234, 4-235, 4-237, 4-238, 4-239, 4-243, 4-244, 4-247, 4-248, 4-249, 4-251, 5-13, 6-7, 6-17, 6-26, 6-30, 6-37, 6-39, 6-50, 6-53, 6-54, 6-57, 6-62, 6-70, 6-79, 6-80, 6-83, 6-90, 6-97, 6-99, 6-100, 6-101, 6-105, 6-111, 6-125, 6-127, 6-129, 6-130, 6-131, 6-132, 6-135, 6-136, 6-144, 6-145, 6-152, 6-155, 6-158,

Electromagnetic Fields (EMF), 2-75, 2-79, 3-65, 3-72, 3-73, 3-74, 3-75, 3-76, 3-77, 3-78, 3-79, 3-80, 3-81, 3-82, 3-83, 4-53, 4-65, 4-72, 4-105, 4-116, 4-120, 4-212, 4-216, 4-233, 4-234, 6-10, 6-12, 6-15, 6-33, 6-52, 6-81, 6-140

Environmental Justice, 1-14, 1-19, 1-25, 2-76, 2-79, 2-90, 3-2, 3-99, 3-100, 3-112, 3-115, 4-90, 4-91, 4-94, 4-120, 4-122, 4-123, 4-213, 4-217, 4-220, 4-237, 5-11, 5-13, 6-2, 6-33, 6-47, 6-103, 6-126, 6-127

Geology and Minerals, 2-72, 2-87, 3-2, 3-38, 4-33, 4-211, 4-216, 4-220, 4-228, 5-13

Hassayampa Field Office (HFO), 1-1, 1-5, 1-8, 1-10, 3-25, 3-45, 3-52, 3-53, 3-98, 3-139, 5-6, 5-10, 5-11, 4B-26

Hazardous Materials and Hazardous and Solid Waste, 2-87, 3-2, 3-45, 4-37, 4-212, 4-216, 4-220, 4-229, 5-12

Hieroglyphic Mountains Resource Management Zone (RMZ), 2-81, 3-93, 3-97, 3-146, 3-147, 4-80, 4-81, 4-161, 4-164, 4-170, 4-175, 4-176, 4-178, 4-183, 4B-17

Lake Pleasant Regional Park, 1-20, 1-23, 2-28, 2-32, 2-37, 2-39, 2-40, 2-76, 2-82, 3-22, 3-24, 3-25, 3-35, 3-37, 3-42, 3-45, 3-52, 3-57, 3-59, 3-60, 3-71, 3-92, 3-95, 3-96, 3-99, 3-101, 3-103, 3-104, 3-107, 3-112, 3-114, 3-126, 3-127, 3-128, 3-132, 3-133, 3-148, 3-149, 3-156, 3-164, 3-168, 3-170, 3-171, 3-172, 3-173, 3-174, 3-175, 3-182, 3-185, 3-186, 3-187, 3-191, 3-193, 3-194, 4-58, 4-61, 4-63, 4-81, 4-82, 4-86, 4-87, 4-88, 4-113, 4-115, 4-167, 4-168, 4-172, 4-176, 4-178, 4-185, 4-201, 4-221, 4-230, 4-231, 4-236, 4-240, 4-241, 4-244, 4-248, 6-5, 6-20, 6-26, 6-29, 6-30, 6-38, 6-48, 6-50, 6-69, 6-83, 6-89, 6-103, 6-104, 6-111, 6-119, 6-126, 6-127, 6-131, 6-132, 6-133, 6-135, 6-142, 6-146, 4B-1, 4B-5, 4B-11, 4B-19, 4B-20, 4B-22, 4B-25, 4B-27, 4B-28

Land Use, 1-7, 1-8, 1-9, 1-10, 1-11, 1-12, 1-15, 1-16, 1-17, 1-20, 2-3, 2-4, 2-25, 2-28, 2-32, 2-34, 2-35, 2-37, 2-38, 2-40, 2-46, 2-73, 2-74, 2-88, 3-2, 3-14, 3-19, 3-37, 3-44, 3-50, 3-51, 3-53, 3-55, 3-56, 3-57, 3-58, 3-62, 3-66, 3-67, 3-69, 3-83, 3-91, 3-94, 3-95, 3-107, 3-112, 3-136, 3-137, 3-138, 3-162, 3-164, 3-177, 4-4, 4-43, 4-44, 4-45, 4-46, 4-52, 4-53, 4-56, 4-57, 4-58, 4-59, 4-60, 4-61, 4-62, 4-63, 4-64, 4-65, 4-78, 4-80, 4-89, 4-94, 4-99, 4-100, 4-101, 4-109, 4-113, 4-114, 4-115, 4-149, 4-203, 4-211, 4-212, 4-213, 4-216, 4-219, 4-220, 4-222, 4-224, 4-226, 4-229, 4-230, 4-231, 4-232, 4-236, 4-237, 4-239, 4-240, 4-241, 4-242, 4-243, 4-245, 4-249, 5-4, 5-11, 5-13, 6-2, 6-38, 6-43, 6-44, 6-48, 6-50, 6-66, 6-68, 6-78, 6-79, 6-80, 6-81, 6-88, 6-89, 6-115, 6-125, 6-127, 6-128, 6-129, 6-130, 6-132, 6-133, 6-134, 6-135, 6-137, 6-151, 2A-2, 4B-10, 4B-11, 4B-12, 4B-24

Luke Air Force Base (LAFB), 1-8, 1-11, 1-24, 2-36, 2-37, 2-38, 2-39, 2-40, 2-41, 2-42, 2-45, 2-54, 2-61, 2-62, 2-63, 3-24, 3-41, 3-49, 3-52, 3-59, 3-62, 3-67, 3-123, 3-128, 3-177, 4-27, 4-136, 4-225, 4-229, 4-233, 5-7, 5-8, 6-57, 6-62, 6-65, 4B-4, 4B-14, 4B-25, 4B-28

Maricopa Association of Governments (MAG), 1-8, 1-12, 3-12, 3-125, 3-127, 3-128, 4-58, 4-136, 4-224, 4-240, 4-241, 4-242, 5-7, 5-8, 6-10, 6-50, 6-62, 6-69, 6-83, 6-135, 6-149, 4B-22, 4B-23, 4B-24

Maricopa County, 1-3, 1-5, 1-6, 1-11, 1-18,2-7, 2-13, 2-33, 2-39, 2-40, 2-48, 2-57, 2-58, 2-74, 2-77, 2-85, 2-86, 3-3, 3-5, 3-6, 3-7, 3-8, 3-11, 3-12, 3-17, 3-48, 3-52, 3-55, 3-57, 3-59, 3-62, 3-65, 3-67, 3-72, 3-87, 3-90, 3-95, 3-96, 3-99, 3-101, 3-102, 3-103, 3-104, 3-105, 3-106, 3-107, 3-111, 3-112, 3-113, 3-114, 3-116, 3-125, 3-126, 3-137, 3-148, 3-162, 3-163, 3-165, 3-167, 3-174, 3-186, 4-5, 4-6, 4-9, 4-12, 4-22, 4-23, 4-45, 4-52, 4-58, 4-61, 4-62, 4-63, 4-64, 4-81, 4-83, 4-85, 4-87, 4-88, 4-91, 4-92, 4-95, 4-96, 4-97, 4-98, 4-101, 4-103, 4-104, 4-106, 4-107, 4-110, 4-112, 4-115, 4-117, 4-125, 4-149, 4-156, 4-213, 4-217, 4-219,

4-220, 4-223, 4-224, 4-225, 4-230, 4-231, 4-236, 4-237, 4-238, 4-240, 5-6, 5-7, 6-5, 6-7, 6-10, 6-15, 6-20, 6-23, 6-26, 6-30, 6-34, 6-39, 6-43, 6-45, 6-48, 6-50, 6-58, 6-59, 6-69, 6-79, 6-82, 6-83, 6-91, 6-131, 6-132, 6-133, 6-135, 6-139, 6-142, 6-147, 6-150, 6-151, 6-152, 6-157, 4B-1, 4B-2, 4B-4, 4B-5, 4B-8, 4B-12, 4B-14, 4B-15, 4B-20, 4B-22, 4B-23, 4B-24

Mitigation, 1-22, 1-24, 2-85, 2-87, 2-91, 2-93, 2-96, 3-84, 4-2, 4-22, 4-31, 4-32, 4-37, 4-42, 4-64, 4-72, 4-77, 4-89, 4-125, 4-130, 4-131, 4-138, 4-146, 4-147, 4-179, 4-197, 4-208, 4-209, 5-5, 6-2, 6-6, 6-20, 6-23, 6-29, 6-32, 6-34, 6-45, 6-84, 6-90, 6-91, 6-93, 6-98, 6-101, 6-102, 6-105, 6-110, 6-139, 6-142, 6-143, 6-144, 6-145, 6-146, 6-149, 6-151, 6-154, 6-156, 6-157, 6-158, 6-160, 6-161

Morgan Substation, 1-1, 1-6, 1-7, 1-9, 2-3, 2-5, 2-10, 2-25, 2-28, 2-32, 2-36, 2-37, 2-38, 2-39, 2-40, 2-41, 2-42, 2-43, 2-46, 2-47, 2-49, 2-56, 2-58, 2-87, 3-7, 3-8, 3-12, 3-35, 3-48, 3-60, 3-82, 3-90, 3-91, 3-123, 3-140, 3-147, 3-148, 3-155, 3-156, 3-167, 3-190, 4-32, 4-58, 4-61, 4-126, 4-167, 4-175, 4-230, 4-234, 5-8, 6-32, 6-86, 6-87, 6-108, 6-134, 4B-4

Off Highway Vehicles (OHVs), 1-25, 1-26, 2-76, 2-78, 2-83, 2-90, 3-59, 3-91, 3-93, 3-95, 3-96, 3-97, 3-98, 3-107, 3-110, 3-111, 3-126, 3-141, 3-144, 3-146, 3-147, 3-148, 3-149, 3-156, 4-77, 4-79, 4-80, 4-81, 4-82, 4-83, 4-84, 4-85, 4-86, 4-87, 4-88, 4-89, 4-90, 4-103, 4-104, 4-111, 4-116, 4-160, 4-163, 4-164, 4-165, 4-166, 4-169, 4-171, 4-174, 4-217, 4-219, 4-236, 4-237, 6-2, 6-13, 6-14, 6-57, 6-70, 6-71, 6-78, 6-81, 6-82, 6-90, 6-102, 6-103, 6-111, 6-115, 6-117, 6-121, 6-128, 6-131, 6-136, 6-143, 6-144, 6-145, 6-146, 6-149, 6-150, 6-151, 6-152, 6-153, 6-154, 6-155, 6-156, 6-157, 6-158, 6-159, 6-160, 6-161, 4B-17, 4B-20, 4B-21

Paleontology, 2-75, 2-89, 3-2, 3-87, 3-88, 3-89, 3-90, 4-74, 4-212, 4-217, 4-235, 5-11, 5-13

Property Taxes, 2-77, 3-104, 3-105, 4-91, 4-101, 4-106, 4-110, 4-115, 4-118, 6-44, 6-53, 6-54, 6-70, 6-82, 6-127, 6-131, 6-136

Property Values, 1-25, 2-77, 2-79, 3-108, 3-109, 4-53, 4-91, 4-93, 4-94, 4-98, 4-99, 4-106, 4-108, 4-110, 4-113, 4-118, 4-119, 4-120, 4-121, 4-125, 6-8, 6-9, 6-12, 6-15, 6-16, 6-17, 6-18, 6-19, 6-23, 6-25, 6-27, 6-28, 6-32, 6-35, 6-38, 6-43, 6-46, 6-47, 6-48, 6-59, 6-62, 6-64, 6-70, 6-72, 6-73, 6-74, 6-75, 6-77, 6-78, 6-81, 6-84, 6-109, 6-127, 6-130, 6-131, 6-136, 6-137, 6-140, 6-141, 3A-1, 3A-2, 3A-3, 3A-5, 3A-6

Proposed Action, 1-1, 1-9, 1-11, 1-12, 1-13, 1-14, 1-15, 1-18, 1-19, 1-23, 1-24, 1-27, 2-1, 2-2, 2-3, 2-5, 2-6, 2-18, 2-23, 2-24, 2-25, 2-26, 2-28, 2-29, 2-30, 2-31, 2-32, 2-33, 2-34, 2-35, 2-36, 2-38, 2-41, 2-43, 2-47, 2-48, 2-56, 2-57, 2-58, 2-59, 2-60, 2-61, 2-62, 2-63, 2-64, 2-65, 2-66, 2-68, 2-69, 2-71, 2-72, 2-73, 2-74, 2-75, 2-76, 2-77, 2-78, 2-79, 2-80, 2-81, 2-82, 2-83, 2-85, 2-87, 2-97, 2-98, 3-1, 3-2, 3-12, 3-17, 3-25, 3-26, 3-28, 3-29, 3-30, 3-31, 3-32, 3-33, 3-34, 3-35, 3-36, 3-37, 3-42, 3-43, 3-45, 3-46, 3-47, 3-48, 3-49, 3-50, 3-52, 3-55, 3-56, 3-57, 3-59, 3-60, 3-61, 3-65, 3-70, 3-71, 3-72, 3-82, 3-83, 3-87, 3-90, 3-91, 3-92, 3-99, 3-100, 3-104, 3-105, 3-106, 3-110, 3-112, 3-119, 3-123, 3-124, 3-125, 3-126, 3-130, 3-133, 3-134, 3-135, 3-136, 3-140, 3-143, 3-145, 3-146, 3-147, 3-148, 3-151, 3-153, 3-154, 3-155, 3-158, 3-159, 3-160, 3-163, 3-164, 3-165, 3-166, 3-167, 3-168, 3-169, 3-170, 3-171, 3-172, 3-173, 3-174, 3-176, 3-177, 3-179, 3-180, 3-183, 3-184, 3-185, 3-186, 3-187, 3-188, 3-189, 3-190, 3-191, 3-192, 3-193, 4-1, 4-3, 4-4, 4-6, 4-7, 4-8, 4-9, 4-10, 4-14, 4-15, 4-16, 4-17, 4-18, 4-19, 4-20, 4-21, 4-25, 4-26, 4-27, 4-28, 4-29, 4-30, 4-31, 4-34, 4-35, 4-36, 4-37, 4-40, 4-41, 4-42, 4-43, 4-44, 4-45, 4-46, 4-47, 4-48, 4-50, 4-51, 4-52, 4-53, 4-

54, 4-55, 4-56, 4-57, 4-58, 4-59, 4-60, 4-61, 4-62, 4-63, 4-64, 4-65, 4-68, 4-69, 4-72, 4-75, 4-76, 4-77, 4-79, 4-80, 4-81, 4-82, 4-83, 4-85, 4-86, 4-87, 4-88, 4-89, 4-93, 4-94, 4-95, 4-96, 4-97, 4-98, 4-99, 4-100, 4-101, 4-102, 4-103, 4-104, 4-105, 4-106, 4-107, 4-108, 4-109, 4-110, 4-111, 4-112, 4-113, 4-115, 4-116, 4-117, 4-118, 4-119, 4-120, 4-121, 4-122, 4-123, 4-124, 4-126, 4-128, 4-129, 4-130, 4-135, 4-136, 4-137, 4-138, 4-141, 4-142, 4-144, 4-145, 4-151, 4-156, 4-157, 4-158, 4-160, 4-161, 4-164, 4-165, 4-167, 4-168, 4-169, 4-170, 4-171, 4-172, 4-175, 4-176, 4-179, 4-181, 4-182, 4-183, 4-184, 4-185, 4-186, 4-187, 4-191, 4-192, 4-193, 4-194, 4-195, 4-196, 4-203, 4-204, 4-205, 4-206, 4-208, 4-215, 4-219, 4-220, 4-221, 4-228, 4-229, 4-230, 4-234, 4-239, 4-243, 4-244, 4-246, 4-247, 4-248, 4-249, 5-1, 5-8, 6-2, 6-3, 6-5, 6-6, 6-10, 6-12, 6-13, 6-14, 6-15, 6-16, 6-19, 6-26, 6-29, 6-34, 6-36, 6-39, 6-40, 6-43, 6-46, 6-51, 6-54, 6-55, 6-56, 6-57, 6-62, 6-65, 6-67, 6-68, 6-71, 6-75, 6-76, 6-78, 6-79, 6-80, 6-84, 6-86, 6-87, 6-89, 6-91, 6-94, 6-96, 6-105, 6-106, 6-109, 6-110, 6-111, 6-112, 6-115, 6-116, 6-118, 6-119, 6-124, 6-125, 6-126, 6-127, 6-128, 6-129, 6-130, 6-131, 6-133, 6-134, 6-135, 6-138, 6-141, 6-142, 6-148, 6-155, 6-156, 6-157, 2A-1, 4B-27

Public Health and Safety, 1-23, 2-75, 2-88, 3-2, 3-65, 4-65, 4-212, 4-216, 4-233, 5-11, 5-13, 6-8, 6-28, 6-31, 6-32, 6-33, 6-35, 6-38, 6-73, 6-74, 6-89, 6-90, 6-140

Range Resources, 2-73, 2-88, 3-1, 3-2, 3-50, 3-58, 3-63, 3-91, 3-142, 4-43, 4-44, 4-53, 4-56, 4-60, 4-63, 4-64, 4-212, 4-216, 4-220, 4-222, 4-229, 4-232, 4-233, 4-248, 6-2, 6-115, 2A-4

Recreation and Special Designations, 1-7, 1-22, 1-25, 1-26, 2-4, 2-32, 2-39, 2-73, 2-74, 2-75, 2-76, 2-78, 2-83, 2-89, 2-90, 2-94, 3-2, 3-50, 3-51, 3-52, 3-53, 3-56, 3-59, 3-60, 3-61, 3-86, 3-91, 3-92, 3-93, 3-94, 3-95, 3-96, 3-97, 3-98, 3-99, 3-107, 3-109, 3-110, 3-111, 3-135, 3-147, 3-148, 3-156, 3-160, 4-4, 4-46, 4-47, 4-53, 4-56, 4-57, 4-58, 4-59, 4-60, 4-61, 4-62, 4-63, 4-77, 4-78, 4-79, 4-80, 4-81, 4-82, 4-83, 4-84, 4-85, 4-86, 4-87, 4-88, 4-89, 4-90, 4-91, 4-94, 4-103, 4-104, 4-106, 4-111, 4-116, 4-119, 4-148, 4-150, 4-161, 4-164, 4-170, 4-213, 4-217, 4-219, 4-220, 4-221, 4-222, 4-223, 4-224, 4-226, 4-230, 4-231, 4-232, 4-233, 4-236, 4-237, 4-239, 4-250, 5-5, 5-6, 5-7, 5-11, 5-13, 6-2, 6-3, 6-6, 6-13, 6-20, 6-21, 6-24, 6-27, 6-30, 6-48, 6-50, 6-51, 6-52, 6-69, 6-70, 6-71, 6-81, 6-82, 6-89, 6-90, 6-96, 6-100, 6-102, 6-103, 6-104, 6-110, 6-111, 6-128, 6-129, 6-130, 6-131, 6-135, 6-136, 6-141, 6-142, 6-143, 6-144, 6-145, 6-146, 6-147, 6-148, 6-149, 6-150, 6-151, 6-152, 6-153, 6-154, 6-155, 6-156, 6-157, 6-158, 6-159, 6-160, 6-161, 3A-7, 4B-9, 4B-11, 4B-13, 4B-16, 4B-17, 4B-18, 4B-19, 4B-20, 4B-21, 4B-27

Resource Management Plan Amendment (RMPA), 1-5, 1-8, 1-9, 1-21, 1-22, 1-24, 1-27, 1-28, 2-1, 2-2, 2-3, 2-5, 2-25, 2-26, 2-28, 2-30, 2-31, 2-34, 2-35, 2-42, 2-47, 2-55, 2-60, 2-81, 3-53, 4-3, 4-33, 4-56, 4-57, 4-59, 4-60, 4-62, 4-150, 4-157, 4-158, 4-160, 4-161, 4-164, 4-168, 4-169, 4-170, 4-182, 4-183, 4-186, 4-227, 4-228, 4-232, 4-240, 4-244, 4-250, 5-5, 5-8, 5-9, 5-10, 6-2, 6-6, 6-20, 6-24, 6-25, 6-27, 6-29, 6-33, 6-34, 6-40, 6-46, 6-71, 6-73, 6-75, 6-97, 6-129, 2A-1

Saguaro cactus, 2-15, 2-21, 3-1, 3-16, 3-83, 3-86, 3-96, 3-131, 3-133, 3-134, 3-140, 3-141, 3-142, 3-143, 3-144, 3-145, 3-146, 3-147, 3-148, 3-149, 3-150, 3-151, 3-152, 3-153, 3-154, 3-155, 3-156, 3-157, 3-158, 3-159, 3-192, 4-142, 4-143, 4-144, 4-152, 4-154, 4-155, 4-156, 4-157, 4-159, 4-162, 4-163, 4-166, 4-168, 4-171, 4-172, 4-173, 4-174, 4-175, 4-

177, 6-22, 6-33, 6-41, 6-87, 6-91, 6-104, 6-142, 6-143, 6-146, 6-150, 6-151, 6-158, 6-159, 6-160, 6-161, 2A-12, 2A-13, 12A-4, 2A-15, 2B-2, 2B-3, 4B-16, 4B-18, 4B-19

Scenic Route, 3-141

Socioeconomics, 1-23, 1-25, 1-26, 2-25, 2-76, 2-77, 2-78, 2-79, 2-90, 3-2, 3-99, 4-4, 4-64, 4-90, 4-91, 4-92, 4-95, 4-120, 4-125, 4-213, 4-217, 4-220, 4-237, 4-239, 5-11, 5-13, 6-3, 6-26, 6-27, 6-30, 6-37, 6-39, 6-42, 6-69, 6-83, 6-103, 6-125, 6-126, 6-127, 6-130, 6-131, 6-135, 6-149, 6-152, 6-154, 6-157

Soils, 2-8, 2-12, 2-13, 2-15, 2-17, 2-23, 2-24, 2-34, 2-35, 2-72, 2-79, 2-85, 2-86, 2-90, 2-91, 3-2, 3-11, 3-13, 3-14, 3-15, 3-16, 3-41, 3-43, 3-46, 3-47, 3-48, 3-86, 3-118, 3-119, 3-123, 3-124, 3-125, 3-131, 3-132, 3-133, 3-134, 3-136, 3-166, 3-168, 3-183, 4-4, 4-22, 4-23, 4-37, 4-38, 4-39, 4-40, 4-41, 4-75, 4-83, 4-90, 4-104, 4-105, 4-126, 4-127, 4-128, 4-129, 4-130, 4-131, 4-132, 4-141, 4-188, 4-190, 4-213, 4-217, 4-220, 4-222, 4-224, 4-226, 4-235, 4-239, 4-240, 5-11, 5-13, 6-3, 6-45, 6-101, 6-144, 6-147, 6-159, 6-161, 2A-1, 2A-3, 2A-6, 2A-7, 2A-8, 2A-9, 2B-4

Sonoran desert tortoise, 1-24, 2-12, 2-13, 2-15, 2-79, 2-83, 2-95, 2-96, 2-97, 3-90, 3-111, 3-112, 3-180, 3-181, 3-183, 3-184, 3-190, 3-191, 3-194, 4-105, 4-111, 4-116, 4-120, 4-199, 4-200, 4-205, 4-206, 4-207, 4-208, 4-209, 4-210, 6-21, 6-24, 6-28, 6-30, 6-31, 6-34, 6-35, 6-39, 6-40, 6-44, 6-50, 6-71, 6-91, 6-92, 6-93, 6-94, 6-96, 6-97, 6-99, 6-101, 6-104, 6-110, 6-117, 6-118, 6-140, 6-142, 6-147, 6-150, 6-151, 6-152, 6-155, 6-159

Special Status Species, 1-23, 2-79, 2-80, 2-83, 2-95, 3-179, 3-183, 3-192, 4-105, 4-139, 4-140, 4-141, 4-144, 4-145, 4-197, 4-198, 4-199, 4-200, 4-201, 4-202, 4-203, 4-205, 4-206, 4-207, 4-208, 4-210, 4-214, 4-215, 4-218, 4-251, 6-3, 6-92, 6-94, 6-96, 6-99, 6-100, 6-101, 6-117, 2A-7

State Trust lands, 2-17, 2-18, 2-19, 2-23, 2-27, 2-29, 2-30, 2-34, 2-39, 2-40, 2-47, 2-57, 2-58, 2-73, 2-78, 2-94, 3-25, 3-30, 3-47, 3-52, 3-54, 3-56, 3-83, 3-97, 3-104, 3-106, 3-107, 3-137, 3-163, 4-53, 4-58, 4-61, 4-64, 4-88, 4-89, 4-93, 4-102, 4-110, 4-116, 4-117, 4-119, 4-165, 4-180, 4-221, 4-228, 4-229, 4-230, 4-231, 4-232, 4-237, 6-122, 6-125, 6-126, 4B-20

Sub-alternative: State Trust Land Route Variation, 2-1, 2-25, 2-29, 2-30, 2-58, 2-59, 2-68, 2-71, 2-72, 2-73, 2-74, 2-75, 2-76, 2-77, 2-78, 2-79, 2-80, 2-81, 2-82, 2-83, 2-87, 3-25, 3-26, 3-30, 3-31, 3-32, 3-33, 3-34, 3-36, 3-70, 3-71, 3-131, 3-158, 3-159, 3-167, 3-191, 4-20, 4-28, 4-30, 4-36, 4-42, 4-45, 4-46, 4-48, 4-50, 4-51, 4-54, 4-55, 4-63, 4-64, 4-71, 4-76, 4-77, 4-89, 4-96, 4-102, 4-117, 4-118, 4-119, 4-120, 4-122, 4-123, 4-124, 4-130, 4-138, 4-145, 4-176, 4-178, 4-181, 4-182, 4-183, 4-184, 4-185, 4-195, 4-196, 4-207, 6-2, 6-46, 6-75

Sun Valley Substation, 1-1, 1-5, 1-6, 2-3, 2-5, 2-25, 2-26, 2-28, 2-31, 2-33, 2-34, 2-36, 2-38, 2-41, 2-43, 2-44, 2-45, 2-49, 2-56, 2-58, 2-60, 2-68, 2-97, 3-58, 3-59, 3-60, 3-134, 3-140, 3-141, 3-142, 3-167, 3-185, 3-186, 3-189, 4-34, 4-53, 4-63, 4-79, 4-88, 4-125, 4-126, 4-152, 4-153, 4-156, 4-204, 4-234, 4-244, 6-9, 6-51, 6-119, 4B-6, 4B-8

Transportation, 1-4, 1-5, 1-7, 1-12, 1-13, 1-14, 1-17, 1-22, 1-24, 1-26, 2-4, 2-5, 2-10, 2-26, 2-72, 2-74, 2-80, 2-90, 2-91, 3-2, 3-19, 3-26, 3-27, 3-46, 3-50, 3-53, 3-55, 3-56, 3-57, 3-58, 3-62, 3-65, 3-69, 3-102, 3-125, 3-126, 3-127, 3-128, 3-129, 3-137, 3-140, 3-147, 3-148, 3-178, 4-7, 4-9, 4-10, 4-15, 4-16, 4-17, 4-18, 4-19, 4-20, 4-21, 4-38, 4-39, 4-53, 4-56, 4-57, 4-58, 4-59, 4-61, 4-63, 4-90, 4-132, 4-133, 4-134, 4-135, 4-136, 4-137, 4-138, 4-157,

4-159, 4-160, 4-161, 4-162, 4-165, 4-168, 4-173, 4-176, 4-213, 4-218, 4-221, 4-223, 4-224, 4-225, 4-229, 4-232, 4-233, 4-236, 4-240, 4-241, 4-242, 4-243, 4-245, 4-247, 4-248, 4-249, 5-5, 5-7, 5-11, 5-13, 6-3, 6-7, 6-10, 6-15, 6-16, 6-26, 6-30, 6-34, 6-37, 6-39, 6-43, 6-56, 6-58, 6-59, 6-60, 6-61, 6-62, 6-63, 6-64, 6-65, 6-66, 6-68, 6-69, 6-74, 6-76, 6-78, 6-83, 6-84, 6-108, 6-114, 6-122, 6-124, 6-125, 6-128, 6-129, 6-130, 6-131, 6-132, 6-133, 6-134, 6-135, 6-138, 6-139, 6-141, 6-145, 6-155, 2A-11, 2A-13, 4B-22, 4B-23, 4B-24, 4B-25, 4B-26, 4B-27

U.S. Bureau of Reclamation (USBR), 1-5, 1-16, 2-5, 2-35, 2-36, 2-37, 2-39, 3-25, 3-52, 3-53, 3-61, 3-83, 3-170, 4-45, 4-52, 4-57, 4-60, 4-62, 4-63, 4-221, 4-226, 4-230, 4-231

U.S. Environmental Protection Agency (EPA), 1-8, 3-1, 3-2, 3-6, 3-8, 3-9, 3-10, 3-11, 3-12, 3-13, 3-16, 3-17, 3-18, 3-46, 3-47, 3-48, 3-66, 3-83, 3-140, 3-161, 3-162, 3-168, 4-5, 4-6, 4-9, 4-11, 4-39, 4-66, 4-121, 5-7, 5-8, 6-57, 6-105, 6-106, 6-107, 6-108, 4B-26

Unavoidable Adverse Impacts, 4-24, 4-32, 4-37, 4-43, 4-65, 4-74, 4-77, 4-90, 4-125, 4-132, 4-138, 4-147, 4-186, 4-197, 4-210

Utility Rates, 3-104, 3-106, 4-103, 4-106, 4-111, 4-116, 4-119, 6-26, 6-30, 6-37, 6-39

Vegetation, 1-23,2-9, 2-10, 2-14, 2-18, 2-19, 2-20, 2-21, 2-22, 2-24, 2-80, 2-89, 2-91, 2-92, 2-93, 2-94, 3-1, 3-2, 3-4, 3-9, 3-16, 3-21, 3-55, 3-71, 3-84, 3-85, 3-86, 3-98, 3-108, 3-110, 3-124, 3-129, 3-130, 3-131, 3-132, 3-133, 3-136, 3-138, 3-139, 3-140, 3-141, 3-142, 3-143, 3-144, 3-145, 3-146, 3-147, 3-148, 3-149, 3-150, 3-151, 3-152, 3-153, 3-154, 3-155, 3-156, 3-157, 3-158, 3-159, 3-163, 3-166, 3-177, 3-180, 3-181, 3-182, 3-183, 3-186, 3-189, 3-191, 3-192, 3-193, 3-194, 4-4, 4-13, 4-25, 4-38, 4-67, 4-69, 4-70, 4-71, 4-72, 4-73, 4-74, 4-79, 4-82, 4-83, 4-84, 4-90, 4-104, 4-105, 4-128, 4-131, 4-139, 4-140, 4-141, 4-143, 4-144, 4-145, 4-146, 4-147, 4-152, 4-153, 4-154, 4-155, 4-156, 4-157, 4-158, 4-162, 4-163, 4-166, 4-175, 4-177, 4-186, 4-188, 4-190, 4-197, 4-199, 4-207, 4-211, 4-212, 4-214, 4-215, 4-217, 4-218, 4-220, 4-222, 4-224, 4-225, 4-226, 4-232, 4-236, 4-237, 4-239, 4-243, 4-244, 4-249, 5-12, 5-13, 6-3, 6-20, 6-24, 6-41, 6-45, 6-84, 6-90, 6-91, 6-94, 6-95, 6-97, 6-98, 6-101, 6-107, 6-115, 6-123, 6-143, 6-144, 6-145, 6-146, 6-147, 6-150, 6-151, 6-156, 6-158, 6-159, 6-160, 6-161, 2A-2, 2A-7, 2A-8, 2A-9, 2A-12, 2A-13, 2A-14, 2A-15, 2B-1, 2B-2, 2B-3, 2B-4, 4B-18, 4B-26

Visual Resources, 1-26, 2-34, 2-58, 2-81, 2-82, 2-93, 3-2, 3-136, 3-137, 3-139, 3-140, 3-142, 5-12, 6-3, 6-5, 6-6, 6-7, 6-9, 6-11, 6-13, 6-14, 6-15, 6-20, 6-23, 6-24, 6-27, 6-29, 6-31, 6-32, 6-33, 6-34, 6-50, 6-54, 6-58, 6-60, 6-63, 6-71, 6-72, 6-76, 6-81, 6-83, 6-84, 6-91, 6-115, 6-124, 6-127, 6-133, 6-134, 6-137, 6-139, 6-141, 6-146, 2A-9

Water Resources, 2-82, 2-95, 3-2, 3-14, 3-41, 3-160, 3-169, 4-4, 4-57, 4-61, 4-62, 4-64, 4-82, 4-86, 4-87, 4-92, 4-148, 4-149, 4-150, 4-153, 4-156, 4-157, 4-161, 4-164, 4-167, 4-168, 4-169, 4-171, 4-172, 4-175, 4-176, 4-178, 4-179, 4-184, 4-186, 4-214, 4-218, 4-221, 4-222, 4-244, 4-247, 4-248, 4-186, 4-187, 4-191, 4-192, 4-193, 4-194, 4-195, 4-196, 4-214, 4-218, 4-220, 4-248, 5-7, 5-11, 5-14, 6-98

Wetlands, 1-15, 3-161, 3-162, 3-166, 4-248, 4-249, 6-105, 3A-3

Wildlife, 1-2, 1-16, 1-23, 2-13, 2-15, 2-21, 2-23, 2-24, 2-79, 2-83, 2-95, 2-96, 3-2, 3-15, 3-16, 3-52, 3-55, 3-60, 3-67, 3-71, 3-91, 3-96, 3-107, 3-110, 3-132, 3-135, 3-160, 3-168, 3-170, 3-171, 3-172, 3-173, 3-178, 3-179, 3-180, 3-181, 3-182, 3-183, 3-184, 3-185, 3-186,

3-187, 3-188, 3-192, 3-193, 3-194, 4-4, 4-38, 4-41, 4-82, 4-83, 4-90, 4-103, 4-104, 4-105, 4-197, 4-198, 4-199, 4-203, 4-204, 4-205, 4-206, 4-207, 4-208, 4-209, 4-210, 4-214, 4-215, 4-218, 4-220, 4-221, 4-222, 4-224, 4-226, 4-236, 4-249, 4-250, 4-251, 5-7, 5-12, 5-13, 6-3, 6-6, 6-10, 6-15, 6-16, 6-21, 6-29, 6-31, 6-35, 6-39, 6-40, 6-44, 6-45, 6-46, 6-56, 6-61, 6-66, 6-72, 6-91, 6-92, 6-93, 6-94, 6-95, 6-96, 6-97, 6-98, 6-99, 6-100, 6-101, 6-103, 6-104, 6-106, 6-110, 6-111, 6-140, 6-143, 6-145, 6-146, 6-147, 6-150, 6-161, 2A-2, 2A-3, 2A-8, 2A-9, 2A-12, 2A-14, 4B-19, 4B-21, 4B-27

Appendix 2A
Best Management Practices

This appendix describes a number of Best Management Practices (BMPs) intended to reduce the potential for short- and long-term impacts to identified resources. These BMPs would be implemented by APS, its agents, and contractors during construction and operation of the Sun Valley to Morgan 500/230kV Transmission Line Project and would be incorporated into all construction specifications and contract documents, as appropriate. All construction personnel would be required to follow them. These BMPs are considered by BLM to be added to the Proposed Action and Action Alternatives evaluated in the Sun Valley to Morgan Project Final EIS and Proposed RMPA for the purposes of environmental impact analysis.

Air Quality

1. Project activities would be in compliance with all applicable federal, state, and local laws and regulations concerning prevention and control of air pollution during construction and operation. The POD and ROW Grant would include these BMPs.

2. APS and/or the construction contractor would obtain necessary air quality (i.e., fugitive dust control) permits before starting construction or operating equipment that would result in regulated atmospheric or fugitive dust emissions.

3. Project personnel would be required to implement measures to minimize fugitive dust emissions from construction activities. To accomplish this, the following measures would be implemented:

    - For the duration of construction activities, actively disturbed areas would be stabilized through the use of water or BLM-approved chemical dust suppressants as required to meet dust control plans and permits issued by state and local regulators. Disturbed areas, including soil storage piles, would be maintained and stabilized as appropriate to minimize fugitive dust emissions. Active stabilization may not be required if local conditions (i.e., soil moisture, natural crusting, low winds) are adequately maintaining ambient air impacts within requirements of the dust control permit and plan.

    - Bulk soil material stored onsite that is a possible fugitive dust source would be actively wetted, compacted, contoured, protected by wind breaks, controlled with BLM-approved chemical suppressants or a combination of these practices as needed, to minimize air quality impacts.

    - Fugitive dust emissions would be minimized by enforcing construction vehicle speed limits on dirt/gravel roads and a combination of active and passive dust suppression measures, including:

- Unpaved roads and yards onsite and within the authorized ROWs would be watered as necessary when being used. If dust suppressants other than water were to be proposed by the construction contractor, it would require prior approval by the BLM and possible NEPA analysis.

- Combustion emissions from mobile sources would be minimized by proper maintenance and tune-up of equipment.

Landscape Preservation and Impact Avoidance

1. All construction vehicle movement outside the ROW would be restricted to predesignated access, contractor-acquired access, or public roads. To the extent practicable, construction vehicle movement within the ROW would be limited to predesignated disturbance areas and access routes.

2. To the maximum extent practical, all trees, native shrubs, and other vegetation would be avoided or protected during construction activities except where safety clearances are required for structures and equipment, approved construction and permanent roads, construction yards and staging areas, and excavation operations.

3. All areas around transmission line structures would be backfilled, recontoured, and returned as close as possible to the original condition and grade.

4. Wherever possible stream channels, steep slopes, or sensitive environmental areas would not be used for equipment or materials storage or stockpiling; construction staging or maintenance, field offices, hazardous material or fuel storage, solid waste, handling, or temporary access roads.

5. Excavated or graded materials would not be stockpiled or deposited on or within 100 feet of any steep slopes, where defined, or seasonally active ephemeral drainages.

6. The width of construction and new temporary access roads would be kept to the absolute minimum needed, avoiding sensitive areas where possible, and limiting disturbance to vegetation.

7. When and where applicable, landscaping standards, including clearing of native vegetation, would be followed as prescribed by local land use and management agencies when work is within their jurisdictions. The BLM Authorized Officer would specify required special handling and recovery techniques to comply with the Arizona Native Plant Law.

8. Project facilities within the authorized rights-of-way would be managed for safe and reliable operation while maintaining vegetation and wildlife habitat to the maximum extent feasible.

Erosion and Sediment Control

1. Planting of native grasses, forbs, trees, or shrubs beneficial to wildlife, or placing of riprap and other materials as appropriate, would be used to prevent and minimize the potential for erosion during construction of project facilities and during the period needed to reestablish permanent vegetative cover on disturbed sites. Sediment fences would be used where appropriate to limit wind and water erosion. Application of water or chemical suppressants, as approved by BLM, would be used in disturbed areas during construction to limit wind erosion.

2. Final erosion control and site restoration measures would be initiated as soon as practical after a particular area is no longer needed for construction, stockpiling, or access. Clearing schedules would be arranged to minimize exposure of soils.

3. Cuts and fills for access roads and work areas would be sloped to prevent erosion and to facilitate revegetation.

4. Where appropriate (i.e., adjacent to sensitive areas or resources), signs would be placed along access roads to discourage off-road vehicle use and Project personnel from driving into unauthorized adjacent areas.

5. Soil or rock stockpiles, excavated materials, or excess soil materials would not be placed near sensitive habitats, including perennial, intermittent, and ephemeral drainage channels, where they may erode into these habitats or be washed away by high water or storm runoff. Long-term soil stockpiles would be revegetated to prevent wind and water erosion.

6. Treading on areas not immediately involved in Project construction activities would be avoided to reduce potential wind erosion and fugitive dust generated during construction.

7. When excessive soil moisture conditions are present in a construction area, construction activities would be relocated or diverted to drier areas to avoid excessive surface rutting in those areas. If wet areas cannot be avoided, weight dispersing systems (i.e., wide-track or balloon tires) or materials to minimize damage to the substrate (i.e., geotextile cushions, pre-fabricated pads, etc.) would be utilized.

Transmission Line ROW

1. Where existing soil and terrain conditions allow, the upper 12 to 18 inches of soil would be removed from structure foundation excavation areas and stockpiled for later use in site restoration.

2. Surface elevations would be returned to approximate pre-Project conditions as practicable.

3. Where roads that service transmission facilities cross fences, a wire gate would be installed to standard BLM specifications. The gates would be built prior to the construction activities and would be kept closed except during active construction at the fence site.

4. If construction activities cause damage to existing range improvements (such as pipelines, fences, troughs, etc.), they would be fixed using material that meets or exceeds the quality of the existing improvement. If damage occurs, the BLM and livestock operator would be notified immediately. If damage occurs during active livestock grazing, repairs would be made within 24 hours.

5. To promote public safety in proximity to transmission line facilities within areas of frequent visitation by the public, fence panels would be installed at the base of guy wires on transmission line structures, and the first 10 feet of guy wires would be marked with safety reflectors, high-visibility tape or plastic, or a similar material to make them highly visible to the public.

Biological Resources

1. The Project would adhere to an integrated pest management plan prepared for the Project (see POD).

2. Current guidelines and methodologies (APLIC 2012, 2006) would be used in the design of the proposed transmission facilities to minimize raptor and other bird electrocution and collision potential.

Cultural Resources

Specific cultural resource inventory and protection measures to be employed for the Project would be outlined in the Project-specific Section 106 Memorandum of Agreement, if needed. If needed, the Programmatic Agreement would be on file at the BLM's Phoenix District Office, and the Arizona State Historic Preservation Office. The POD would contain the Section 106 Memorandum of Agreement, which would contain the following provisions:

- Development of a Historic Properties Treatment Plan defining the treatment to be implemented at specific historic properties to avoid and mitigate adverse effects in compliance with Section 106 of the NHPA.

- Completion of additional Class III field inventories if the approved alternative contains previously unsurveyed areas, including portions of the area of potential effect on private land.

- Development and implementation of a Monitoring Plan that would specify procedures for monitoring of avoided historic properties during construction and through the life of the Project.

- Development and implementation of a Discovery Plan with procedures and timeframes for ceasing work, notifying the BLM and ASLD, protecting and evaluating the discovery, and conducting consultations to determine appropriate treatment and resumption of construction.

- The Discovery Plan would include procedures for addressing discoveries of human remains and other items protected under the Native American Graves Protection and Repatriation Act on Federal land and applicable State laws on State, County, municipal, and private lands.

- Cultural resource sensitivity training for Project workers to avoid damage to cultural resources and ensure that Project personnel understand procedures in the Monitoring and Discovery Plan.

(If needed, the general guidance for Treatment of Historic Properties from a Programmatic Agreement would be added as appropriate.)

Paleontological Resources

1. If paleontological resources are discovered during construction, the BLM would be notified immediately and measures would be taken to protect the resource. An appropriately sized buffer zone would be demarcated around any discovery and construction would not resume within this buffer zone until authorization is given by the BLM Authorized Officer. The significance of the resource would be evaluated and whether or not avoidance was possible. Stabilization and measures to mitigate construction damage might also be required even if avoidance was possible. Should avoidance prove infeasible, further procedures to protect the resource would be determined by the BLM.

Noxious and Invasive Weed Management

1. A noxious and invasive weed survey would be completed prior to any earth disturbing activity including cross-country travel. Noxious or invasive weeds that may be located on the site would be managed according to methods tiered to the BLM's Phoenix District Offices' Weed Management Plans. Should chemical methods be approved, the lessee must submit a Pesticide Use Proposal to the Authorized Officer 60 days prior to the planned application date. A Pesticide Application Report must be submitted to the Authorized Officer by the end of each fiscal year following chemical application.

2. To eliminate the introduction of noxious and invasive weed seeds, roots, or rhizomes; all straw, hay, straw/hay, or other organic products used for reclamation or stabilization activities would be certified free of plant species listed on the Arizona noxious weed list or specifically identified by the BLM Phoenix District Office.

3. To eliminate the introduction of noxious and invasive weed seeds, roots, or rhizomes; all source sites such as borrow pits, fill sources, or gravel pits used to supply

inorganic materials used for construction, maintenance, or reclamation would be inspected and found to be free of plant species listed on the Arizona noxious weed list or specifically identified by the BLM Phoenix District Office. Inspections would be conducted by a BLM-approved weed scientist or qualified biologist.

4. To eliminate the transport of vehicle-borne noxious and invasive weed seeds, roots, or rhizomes, all vehicles and heavy equipment used for the completion, maintenance, inspection, or monitoring of ground disturbing activities would be cleaned of soil and debris capable of transporting weed propagules prior to entering or leaving the work site or project area in a manner acceptable to the BLM Phoenix District Office Weed Coordinator or designated contact person.

5. Prior to entry of vehicles and equipment to a Project area, areas of concern would be identified, flagged, and recorded in the field by a weed scientist or qualified biologist in a manner acceptable to the BLM Phoenix District Office Weed Coordinator or designated contact person.

6. Prior to construction commencement, APS would ensure that all contractors, operators, or permit holders would receive information and training regarding noxious and invasive weed management and identification to all personnel who would be affiliated with the implementation and maintenance phases of the project. The importance of preventing the spread of weeds to uninfested areas and the importance of controlling existing populations of weeds would be explained.

7. To eliminate the transport of soil-borne noxious and invasive weed seeds, roots, or rhizomes, infested soils or materials would not be moved and redistributed on weed-free or relatively weed-free areas. In areas where infestations are identified or noted and infested soils, rock, or overburden must be moved, these materials would be salvaged and stockpiled adjacent to the area from which they were stripped. Appropriate measures would be taken to minimize wind and water erosion of these stockpiles. During reclamation, the materials would be returned to the area from which they were stripped.

8. Prior to Project approval, a site-specific noxious and invasive weed survey would occur and a weed risk assessment would be completed and provided to the BLM. Monitoring would be conducted for a period no shorter than the life of the permit or until bond release and monitoring reports would be provided to the BLM. If the spread of noxious and invasive weeds is noted on Project areas, appropriated weed control procedures would be determined in consultation with BLM personnel and would be in compliance with the appropriate BLM Handbook sections and applicable laws and regulations. All weed control efforts on BLM-managed public lands would be in compliance with BLM Handbook H-9011, H-9011-1 Chemical Pest Control, H-9014 Use of Biological Control Agents of Pests on Public Lands, and H-9015 Integrated Pest Management. A pesticide Application Report must be submitted to the Authorized Officer by the end of the fiscal year following any chemical application.

9. Removal and disturbance of vegetation would be kept to a minimum through construction site management (e.g. using previously disturbed areas and existing easements, limiting equipment/materials storage and staging area sites, etc.).

10. Mixing of herbicides and rinsing of herbicide containers and spray equipment would be conducted only in areas that are a safe distance from environmentally sensitive areas and points of entry to bodies of water (storm drains, irrigation ditches, streams, lakes, or wells).

11. When managing weeds in areas of special status species, impacts of the treatment on such species would be carefully considered. Wherever possible, hand spraying of herbicides would be the preferred method in compliance with an approved Integrated Weed Management Plan and associated environmental impact analyses.

Reclamation

1. Reclamation would normally be accomplished with native species, if available. These would be representative of the indigenous species present in the adjacent habitat. Rationale for potential planting with selected non-natives would be documented. Possible exceptions could include use of non-natives for a temporary cover crop to out-compete weeds.

2. Seeding would occur during November through March to ensure a greater chance of success.

3. Reclamation release criteria are as follows:

   - Achieve an agreed upon percentage of the baseline perennial plant cover of selected comparison areas, normally like adjacent habitat. If the adjacent habitat is severely disturbed, a range site description may be used as a cover standard. Cover is normally crown cover as estimated by the point intercept method. Selected cover can be determined using a method as described in *Sampling Vegetation Attributes, Interagency Technical Reference* (BLM 1996). The reclamation plan for the project area would identify the site-specific release criteria and associated statistical methods in the reclamation plan or permit.

   - No noxious and invasive weeds would be allowed on the sites for reclamation release. Control of noxious and invasive weeds would follow an integrated pest management plan approved by the authorizing officer. A list of Arizona noxious weeds would be provided by the Authorized Officer.

4. Where local conditions allow, up to the first 12 to 18 inches of growth medium would be salvaged, were soil and terrain conditions allow, and stockpiled prior to disturbance for all areas to be reclaimed after construction. All disturbance areas to be reclaimed would be recontoured to blend as nearly as possible with the natural topography prior to revegetation. All compacted portions of the disturbance would be

ripped to a depth of 12 inches unless solid rock is encountered. Adequate, fine-grain seedbed would be established to provide good seed to soil contact. Large blocks and clumps of soil with deep pockets would be avoided. This normally requires some type of tillage procedure after ripping.

5. All portions of access roads not needed for other uses as determined by the Authorized Officer would be reclaimed as soon as possible.

6. Mulching of the seedbed following seeding may be required under certain conditions, such as severe erosion.

7. Respread weed-free vegetation removed from the right-of-way to provide protection, nutrient recycling, and seed source.

8. The success of the vegetative growth on a reclaimed site may be evaluated for release no sooner than during the third growing season after earthwork and planting have been completed. Where it has been determined that revegetation success criteria have not been met, the agencies and the operator would meet to decide on the best course of actions necessary to meet the reclamation goal.

9. Where applicable, the following agencies would be consulted to determine the recommended plant species composition, seeding rates, and planting dates:

   - U.S. Fish and Wildlife Service
   - U.S. Natural Resources Conservation Service
   - U.S. Bureau of Land Management
   - Arizona Game and Fish Department

10. Grasses, forbs, shrubs, and trees appropriate for site conditions and surrounding vegetation would be included on the BLM-approved plant and seed mix list. Species chosen for a site would be matched for site drainage, climate, shading, resistance to erosion, soil type, slope, aspect, and vegetation management goals. Upland revegetation shall match the plant list to the site's soil type, topographic position, elevation, and surrounding natural communities.

11. Construction areas, including storage yards, would be free of waste material and trash accumulations, unless stored in appropriate containers.

12. All unused materials and solid waste would be removed from construction and storage sites during the final phase of work. Unused material may be sold or relocated to other work sites other than the Project. Solid waste would be placed in existing permitted solid waste management facilities.

13. Upon completion of construction, any land disturbed would be graded to provide proper drainage and blend with the natural contour of the land. Following grading and where appropriate, it would be revegetated using plants native to the area, suitable for the site conditions, and beneficial to wildlife.

14. Following completion of construction, all temporary staging areas and construction yards, would be removed from the site.

15. All construction roads not needed for ongoing operations and maintenance activities would be restored to the original contour, and made to discourage vehicular traffic when no longer needed for construction. Culverts would be removed as appropriate, road escarpments would be contoured and vegetated, and all road surfaces would be scarified to establish conditions appropriate for reseeding, drainage, and erosion prevention.

Visual Resources

1. The transmission structures would be finished with flat, Shadow Gray from the BLM color chart.

2. Non-specular conductors and non-reflective and non-refractive insulators would be used to reduce conductor and insulator visibility.

3. In areas of frequent visitation by the public, the base of guy-wires on transmission structures would have fence panels, and the first 10 feet of guy wires would be marked with safety reflectors, high-visibility tape or plastic, or a similar material to make them highly visible to the public.

4. During the implementation of vegetation treatments, irregular margins would be created around treatment areas to better maintain the existing scenic character of the landscape.

Water Pollution Prevention and Monitoring

1. Water needs for soil stabilization during facility construction would be transported by truck or other methods from local water sources.

2. All federal and state laws related to control and abatement of water pollution would be complied with. All waste material and sewage from construction activities or project-related features would be disposed of off-site according to federal and state pollution control regulations.

3. All disturbed drainage channels would be reclaimed as soon as practical, to a standard for aesthetic value comparable to what existed prior to disturbance. Where appropriate, native species capable of bank stabilization would be used to revegetate all disturbed stream banks.

4. Diversion structures would be used to re-direct flows from any drainages potentially impacted by facility features and would be designed to minimize potential destabilization and erosion of adjacent and downgradient drainages.

5. Stormwater management plans would be implemented for Project construction and facility operation to minimize and control erosion from stormwater runoff, and would be contained in the POD. During project construction, stormwater would be managed in compliance with applicable state and federal regulations, including compliance with requirements of the National Pollutant Discharge Elimination System (NPDES) stormwater general permits, which would be obtained for the project. Stormwater management elements would include:

   - Application of BMPs for erosion, sedimentation, and stabilization control during construction activities, and management of oils and other substances during operation to minimize contact with stormwater;
   - Structural controls during operation that could include stabilized stormwater conveyance systems (swales); and
   - Monitoring and maintenance to ensure long-term effectiveness of the management system.

6. Construction specifications would require construction methods that prevent pollutants from accidentally entering or spilling into flowing or dry watercourses, and ground water sources. Potential pollutants and wastes include refuse, garbage, cement, concrete, sewage effluent, industrial waste, oil and other petroleum products, aggregate processing tailings, mineral salts, drilling mud, and thermal pollution.

7. Any construction wastewater from construction operations would be directed to on-site temporary retention basins designed for zero discharge. The water may be reclaimed for construction purposes or evaporated. The residual as a result of evaporation would be removed.

Noise Prevention

Personnel would be required to comply with all applicable federal, state, and local laws and regulations concerning prevention and control of noise during project construction and operation.

Hazardous Material Storage, Handling, and Disposal and Safety Measures

1. Personnel, contractors, and transporters involved with hazardous materials management would be required to comply with federal and state regulations established for the transportation, storage, handling and disposal of hazardous substances, materials and wastes. "Hazardous material" means any substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 USC 9601 et seq., and its regulations (CERCLA). The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended 42 USC 6901 et seq., and its regulations.

2. The potential for adverse impacts from oil and fuel spills would be reduced through careful handling and designation of specific equipment repair and fuel storage areas. In the event that hazardous or regulated materials such as diesel fuel or gasoline are spilled, measures would be taken to control the spill and the National Response Center and/or Arizona Department of Environmental Quality would be notified immediately.

3. The permittee is responsible for clean-up and assumes liability for any and all releases of hazardous substances disposed on public land in accordance with state, federal and local laws and regulations. The permittee would immediately notify the BLM Authorized Officer of any and all releases of hazardous substances on public land.

4. Outdoor oil storage and use areas would be bermed with a capacity sufficient to contain the oil inventory contained in the single largest tank or equipment unit plus sufficient freeboard to prevent overflow. Outlets from these containment areas would be equipped with a normally closed valve. Regular inspections would determine if there had been a leak requiring special attention.

5. Waste materials known or found to be hazardous would be disposed of in approved off-site, permitted treatment or disposal facilities in accordance with federal, state, and local regulations, standards, codes, and laws.

6. Generation of wastes during construction would be minimized through detailed estimating of materials needed and through efficient construction practices. Wastes generated during construction would be recycled to the extent feasible. Concrete waste would be removed to a local licensed landfill. Non-recyclable wastes would be collected and transported to a local licensed landfill.

7. Fuels, lubricant chemicals, and welding gases used during construction would be in controlled storage until used. Any empty containers or waste material would be segregated in storage and properly recycled or disposed of by licensed handlers.

8. Wastewater from concrete truck washdown and cleaning of construction equipment would be managed such that there would be no discharge offsite or discharge to surface waters.

9. Portable toilets or a packaged treatment system would be provided at construction locations along the ROW. Sewage from the portable toilets would be removed regularly and disposed of off-site in accordance with applicable federal and state pollution control regulations. There shall be no dumping of black water, sewage or litter.

Treatment of Saguaro Cactus within the ROW

Saguaros around transmission lines pose a safety threat to the public as they are very conductive to electricity due to their height and high water density. Saguaros that approach close to the transmission line conductors can electrocute someone coming into contact with that saguaro or arc to the transmission line conductors possibly tripping the line. These circumstances pose a safety hazard and thus saguaro treatment under the transmission line conductors is very necessary. Saguaros taller than 10 feet that are within a 50-foot horizontal distance of the outermost wires would require removal or transplant except in areas where vegetation is far below the transmission lines due to a canyon or slope. The following procedures for the treatment would be implemented for the portion of the Project on BLM-managed public lands.

Construction

Prior to construction, APS would inventory all vegetation within the ROW, including saguaros, that would be impacted or would pose a hazard as a result of the Project, and evaluate vegetation for transplant suitability. Either a designated BLM representative (BLM employee or BLM-approved contractor) would participate with APS in the inventory and evaluation, or the inventory would be reviewed and approved by the BLM, at the agency's discretion. Saguaros within the ROW would be removed and transplanted prior to construction, as indicated during the inventory process. All cultural sites would be located and flagged with a 50 foot buffer prior to saguaro removal and relocation. Saguaros in cultural sites would not be transplanted, but would be removed by hand crews, to avoid disturbance of the cultural site. Saguaros within the ROW on BLM-managed public lands that are indentified through the inventory process would be relocated and transplanted along the edge of or portion of the ROW near to where they were removed so that they may continue to be beneficial to local wildlife that may have been using the plant. Transplant sites would be identified that do not interfere with the future operation of the line.

Transplanting or removal of saguaros would not occur between February 15 and August 1 to avoid impacts on the migratory bird nesting season. Transplanting would be performed in accordance with procedures agreed upon between the BLM and APS, or their designated agents. Determination of procedures to be used would be based on information contained in "Salvage Techniques for Saguaro Cacti, Barrel Cacti and Ocotillo" (NRCS 2009). BLM-designated representatives would monitor transplanting activities.

Operations and Maintenance

Saguaros requiring removal would be transplanted where possible and reasonable. Because saguaros that would be impacted by the Project or could pose a hazard as a result of the Project would be removed prior to construction, saguaros that would be treated during the operations and maintenance phase of the Project should be small, new growth. Evaluation of vegetation within the ROW during the operations and maintenance phase of the Project would occur at intervals (to be agreed upon between the BLM and APS, and specified in the POD) such that any new saguaros found to be growing in the ROW would be small. This would allow for safe and easier transplant opportunities, as well as greater potential for transplant success. Saguaros would be treated using the following methods:

- Where possible, APS would relocate saguaros that meet all the following criteria:
    - The saguaro is less than or equal to 10 feet in height
    - The saguaro is within the wire zone of the lines or could potentially grow to become a hazard to the lines in the future
    - The saguaro is greater than 22 feet, vertical distance, from the transmission line conductors at their maximum load conditions
    - The saguaro does not occur within a cultural site
    - Terrain, access, and other environmental or logistical factors are favorable to relocation of the saguaro
    - The saguaro is in good health as determined by BLM or BLM-approved contractor in conjunction with APS
- Saguaros within approximately 100 foot radial distance from the footers of the transmission line towers may be salvaged. This area, under many circumstances, is safe for salvage. Saguaros outside of the 100 foot radial distance may be unsafe to salvage, depending on the size of the plant, and may require removal of the plant through hand crew cutting or mulching with a mower, or pruning.
- APS would work with the BLM to determine which saguaros may be salvageable. Factors such as terrain, access, health of the saguaro, and the number of arms on a saguaro, would determine whether a saguaro may be salvaged within the 100 foot distance around the transmission line towers. Salvage potential of a saguaro would be determined on an individual plant basis.
- All saguaros to be salvaged would be flagged prior to initiating the saguaro salvage and removal portion of the vegetation work. The BLM or its contractor would review the flagged saguaros and provide comment.
- A Removal and Transportation Permit would be obtained from the Department of Agriculture for the saguaro salvage operation, if required.
- All saguaro treatment would be conducted within the permitted ROW for the transmission lines, unless otherwise authorized by the BLM.

- All cultural sites would be located and flagged with a 50 foot buffer prior to saguaro removal and relocation.
- Saguaros to be relocated would be moved to an area absent of cultural resources outside of the wire zone and away from the low sag area for these lines. Transplanted saguaros within the ROW on BLM-managed public lands would be relocated to an acceptable area or along the edge of the ROW near to where they were removed so that they may continue to be beneficial to local wildlife that may have been using the plant.
- If a saguaro occurs in a cultural site, the saguaro would not be relocated or treated using mechanical mowers. Saguaros in cultural sites that are within 22 feet vertical distance and 50 feet horizontal distance of the conductors at maximum load conditions would be cut using hand crews or else pruned.
- Saguaros that are greater than 10 feet tall would remain on site if they are greater than 22 vertical feet and 50 horizontal feet from the transmission line conductors at their maximum load conditions, are determined unsuitable for relocation, and/or that occur within a cultural site. These saguaros could be potentially treated in the future if they grow within the 22 or 50-foot violation distance.
- Saguaros greater than 10 feet tall, for which any portion of the plant comes within 22 feet vertical distance and/or 50 horizontal feet of the transmission line conductors at their maximum load conditions, would either be removed using mechanical mowers or hand crews or pruned; however, if evaluation of vegetation in the ROW occurs at regular intervals as described above, relocation should occur before the saguaro grows to a height that would require removal of the plant. Mechanical mowers would be used to mulch the saguaro in most cases, but hand crews may also be used. Only hand crews would be used if the saguaro is present within a cultural site. For plants that are identified for pruning, the plant would be topped or arms would be removed, making cuts at a 45-degree angle and sealing the wound with a sealing compound (C. Carter, BLM, personal communication April 29, 2013). Pruning may also be used as an alternative to relocation, as determined by the BLM.
- BLM or its designated representatives would monitor transplanting and any removal activities.

References

APLIC (Avian Power Line Interaction Committee). 2012. *Reducing Avian Collisions with Power Lines: The State of the Art in 2012*. Edison Electric Institute and APLIC. Washington, D.C.

APLIC (Avian Power Line Interaction Committee). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA. PIER Final Project Report CEC-500-2006-022. Washington, D.C. and Sacramento, CA. Available online at http://www.aplic.org/mission.php.

APS (Arizona Public Service Company). 2009. Amendment to Saguaro Treatment Protocol (500-2 APS Power Line Corridor Management Plan Amendment). April 2, 2009.

APS (Arizona Public Service Company). 2008. 500-2 APS Power Line Corridor Management Plan, Saguaro Transplanting Section. October 2, 2008.

BLM (Bureau of Land Management). 1996. Sampling Vegetation Attributes, Interagency Technical Reference. BLM.TD.DY-96/002+1730.

NRCS (Natural Resources Conservation Service). 2009. Salvage Techniques for Saguaro Cacti, Barrel Cacti and Ocotillo. September 2009.

This page intentionally left blank.

Appendix 2B
Vegetation Maintenance

Vegetation maintenance serves five main purposes: (1) provides reliable, uninterrupted service to customers; (2) provides safe and efficient transmission of power along existing lines; (3) provides safe and reasonable access to the lines and structures for inspection and maintenance; (4) provides protection against wildfires by reducing the potential for fire ignition from vegetation in and around the power lines; and (5) reduces effects of fire damaging structures or causing power faults in the lines through decreasing fuel load under the lines.

Vegetation Maintenance Overview

APS maintains vegetation that could interfere with the power lines and towers, that could become a fuel load issue under the lines, and to provide vehicle access to the towers for maintenance and repair. Vegetation maintenance work is done within the right-of-way. This work is typically done routinely about every 3 to 10 years, although there are situations where hazardous vegetation may need to be treated out of cycle.

Annual inspections outside of vegetation maintenance may be conducted by air or ground and would have negligible effects to vegetation communities. When access is required for routine maintenance and repairs, the same precautions and procedures used during construction would be used to minimize ground disturbance and vegetation impacts.

Routine Vegetation Maintenance

Routine vegetation maintenance involves the cyclical treatment of vegetation approximately every 3 to 10 year utilizing mechanical, manual, and herbicide treatments as discussed below in the Vegetation Maintenance Methods section. Routine maintenance activities typically do not include ground disturbance, as they are conducted by relatively small crews using minimum equipment, and over a few hours to a few days time. There would be no new roads or access routes required for vegetation maintenance.

Hazard Vegetation Maintenance

Vegetation that present a hazard to the power line and structures require treatment on an ongoing basis outside the routine maintenance cycle. The need to treat hazard vegetation is not common due to the ongoing routine maintenance, but is occasionally required. These hazards can be categorized into three levels, and are treated slightly different for each level:

Level 1 Emergency Hazard - An emergency caused by vegetation occurs when vegetation is arcing to the line, has caused a power fault, is burning from contact or arcing with the line, and when all or a portion of a tree is in contact with the line from falling or growing into the wires. Emergencies due to vegetation on a large, 500 kV line are uncommon, but if it were to occur, it is a very serious event. APS must act immediately to eliminate the hazard no matter the weather or road conditions or time of day or year.

Level 2 Imminent Threat Hazard - There can be two types of imminent threat hazards: (1) a live or dead standing tree or vegetation having defects in the roots, butt, bole, or limbs, which predispose it to imminent mechanical failure which could damage whole or part of the power line or tower; and (2) an imminent threat hazard may also be a tree or branch that has come close enough to the power line such that it poses a safety risk to the public and tree workers. Imminent threat hazards must be treated as soon as possible once the hazard is identified. These hazards are typically treated within a week of identification.

Level 3 Off Cycle Hazard - This type of hazard includes any live or dead tree that poses a future threat to the power line or structures and cannot be left untreated for the next growing season or next maintenance cycle. These hazards do not pose an imminent threat but must be treated prior to the next growing season or out of cycle before it becomes an imminent threat. Treatment of Off Cycle trees may sometimes be scheduled around seasonal timing restrictions.

Vegetation Maintenance Methods

Mechanical Treatment Methods

Mechanical treatment involves the use of a mower to remove and mulch vegetation on site. The mower consists of a rotary cutting device mounted on an arm on a rubber tire or tracked vehicle that mulches trees and large shrubs from the top down. A mechanical mower may be used in the majority of the power line right-of-way for routine vegetation maintenance. The mower would not operate in areas with steep slopes, poor access, water drainages, or within cultural resource sites. Manual hand crews may be used to assist the mower operation in pruning or vegetation disposal.

Manual Treatment Methods

Hand crews are used for all hazard vegetation work and for some routine vegetation maintenance work. For routine vegetation maintenance, hand crews may be used to assist the mechanical mowers, to cut vegetation where mowers cannot be used, or as an alternative method to mechanical mowing. Hand crews consist of line clearance tree workers that use hand tools (chain saws, hand saws, rope) to cut down or prune vegetation. They typically only use pickup trucks as a means of travel to the work site, but may also use a bucket truck and/or chipper.

Herbicide Treatment Methods

The purpose of herbicide treatment is to efficiently maintain clearances obtained following mechanical and/or manual treatments. Herbicide treatment is ideally conducted within one to three growing seasons following the mechanical and/or manual treatments. Vegetation targeted for herbicide treatment includes most vegetation that is targeted for manual and mechanical treatment, the exception being saguaros would not be treated using herbicides. Herbicide treatment involves vegetation that is less than 10 feet tall whose physiology is such that is could encroach within the associated FAC-003 clearance distance, impact the reliability of the transmission line or transmission facilities (e.g., towers, guy wires, etc.), or poses a fire fuel load concern.

APS also proposes to treat any invasive species encountered during the course of an herbicide project within the permitted right-of-way where it is reasonable and prudent to do so and provided the herbicide being applied would be an effective treatment. All activities will be conducted within existing APS power line right-of-way.

Vegetation Maintenance Protocol

Protocol for hazard vegetation work is simple and typically only requires 2 to 6 tree workers accessing the area of concern to prune or remove the offending hazard vegetation. This work is usually completed within 1 to 2 working days. The resulting slash is cut such that it lies within 18 to 24 inches of the ground and is lopped and scattered within the right-of-way in the immediate area.

Protocol for routine vegetation maintenance requires more steps. The remainder of this section focuses on the protocol for routine maintenance work. Below lists the typical routine maintenance protocol:

1. Tall growing vegetation within the right-of-way is cut down and may be treated with herbicides according to the Herbicide Treatment Methods section above (note: see **Appendix 2A** for treatment of saguaro cactus; it would not be treated with herbicides).
2. For each tower along the line, all woody vegetation, including shrubs and trees, would be cut down and treated with herbicides (herbicide treatment excludes cacti) underneath the tower and 40 feet out from each footer of the tower.
3. Lower growing vegetation such as creosote bush and small cacti that do not fall within the 40 feet around the towers are left on site untreated unless: (1) the shrub or cacti blocks access on the existing access routes within the right-of-way; or (2) the shrub density is high causing a fuel load issue under the line. In the case of high density vegetation, the shrubs are thinned to a reasonable and safe density level while providing as much protection as possible to the line and structures in case of fire.
4. Where line spans high above canyons and slopes, either no treatment will be needed, or some thinning may be needed to break up fuels under the line. Typically no treatment is required if the line is 100 feet or greater above vegetation unless the fuel density is heavy and needs to be broken up by thinning.
5. Herbicide application targets vegetation 10 feet tall or smaller that was cut during manual or mechanical vegetation treatment. This treatment ideally is done one to three growing cycles following mechanical or manual treatment. The initial treatment applications are scheduled between April 1 and November 30 with a follow up application to be conducted one year later between April 1 and November 30.

6. Stumps from vegetation treatments are cut no greater than 12 inches above the ground and where possible are cut flush to the ground.
7. For the hand crew operations, slash is lopped and scattered throughout the immediate area in a manner such that debris lies within 18 to24 inches of the ground. Where chippers are used, the chips are broadcast across the right-of-way no deeper than 4 inches in depth. For mower operations, the majority of vegetation, except larger logs, are mulched by the mower and material is broadcast across the right-of-way no deeper than 4 inches in depth.
8. Access for all treatment methods is done using only established roads and access routes to approach the right-of-way. There will be no new roads or access routes required for vegetation maintenance. If a portion of the power line right-of-way is inaccessible by road, the crew will drive to the nearest location and walk in to the right-of-way with the necessary equipment.
9. Vegetation maintenance crews will make every effort to keep impacts within the right-of-way to a minimum. APS will only work within the right-of-way when the soils are dry enough to prevent ruts.
10. All vehicles will be operated in a safe and prudent manner.

Appendix 3A

Literature Review for Transmission Line and Housing Value Studies

TYPE OF EFFECT	AUTHOR(S)	STUDY TYPE	LOCATION	PROPERTY TYPE	IMPACTS ON PRICE
Visual, other	Solum (1985)*	Case study survey of property owners on the perceived effect of transmission lines on property values	Northwest Wisconsin	Rural residential, agricultural, recreational	The residential property owners were most concerned with visual impacts on property values. The agricultural property owners were most concerned with farming around the structures. The recreational property owners were most concerned with the loss of timber from land being cleared. All but one of the 23 properties affected by the transmission line sold at market value. The results show no effect on the prices of all three types of rural properties.
Visual, health and safety concerns	Delaney and Timmons (1992)	Case study survey of real estate professionals on the perceived effect of transmission lines on property values Appraisal-based case studies carried out by the appraisers	Across U.S., Appraisal Institute members	Urban residential	84 percent of respondents believed that the value of a property near a transmission line is negatively affected. The most common cited reasons were visual impacts and potential health hazards. The appraisers examined their own matched paired sales to determine that property values near a transmission line were 10 percent lower than other properties.
Visual, health and safety concerns	Kung and Seagle (1992)*	Case study survey of property owners on the perceived effect of transmission lines on property values	Memphis and Shelby Counties, Tennessee	Urban residential	50 percent of respondents considered the transmission line to have a negative visual impact while 47 percent did not. 72 percent of those who viewed it as having a negative visual impact said it had no effect on the purchase price. None of the respondents said they considered the health impacts of the lines in their purchasing decision, but 87 percent said if they had known of health risks they would have paid less.
Visual, health and safety concerns	Priestly and Evans (1996)*	Case study survey of residents (within 900 feet) on the perceived effect of a transmission line on the neighborhood	28 miles north of San Francisco	Suburban residential	87 percent of respondents said that the visual impacts and health and safety concerns had an adverse effect on their neighborhood. Those who lived in the area prior to the line installation had the most strongly negative perceptions. Distance from the line did not appear to affect perceptions.

Literature Review for Transmission Line and Housing Value Studies (Continued)

TYPE OF EFFECT	AUTHOR(S)	STUDY TYPE	LOCATION	PROPERTY TYPE	IMPACTS ON PRICE
Visual	Rhodeside & Harwell (1988)*	Case study survey of property owners on perceived effects of transmission lines on property values	Virginia and Washington, D.C.	Urban, residential	The results show that 57 percent of respondents said the transmission line had no effect on property value, 27 percent said it had a negative effect due to visual impacts and 16 percent said it had a positive effect due to open space. Property owners who lived in the location before the transmission line was built had the most negative perspectives.
Visual, other	Economics Consultants Northwest (1990)*	Case study survey of property owners on perceived effects of transmission lines on property values	Western Montana	Rural and suburban residential	The results show that 50 percent of property owners within one mile of the transmission line felt it had a negative effect on property values. Only five percent of those within one to three miles had a negative opinion.
Visual	Beauregard Conseil, Enr. (1990)*	Case study survey of property owners on perceived effects of transmission lines on property values	Quebec, Canada	Rural and urban residential	The results show 49 percent of respondents were concerned with the visual impact of the transmission line while only 12 percent of respondents were concerned with the impact on property values.
Visual, proximity	Pitts and Jackson (2007)	Case study survey of realtors and appraisers on their opinions of the effects of transmission lines	Central California	Rural and urban residential	50 percent of the respondents said they had not observed negative impacts on sales prices or days on market due to the transmission lines. 50 percent of the respondents said they had observed negative impacts of two percent to seven percent of property values for those directly adjacent to a transmission line. The price impacts for properties not directly adjacent but with a view of the lines was zero percent to five percent. All affected properties could have an increase of zero to 60 days more on the market. Many respondents indicated that the price effects of transmission lines are more evident in a slow market.

Literature Review for Transmission Line and Housing Value Studies (Continued)

TYPE OF EFFECT	AUTHOR(S)	STUDY TYPE	LOCATION	PROPERTY TYPE	IMPACTS ON PRICE
Visual, health and safety, and proximity	Bond, S. and Hopkins, J. (2000)	Case study survey of property owners on perceived effects of transmission lines on property values Case study based on regression model to examine the property sales with proximity to transmission lines	New Zealand	Urban, residential	The opinion study results show 80 percent of respondents had negative perspectives of transmission lines. Respondents with closer proximity to the line had more negative perspectives than those living further away. 60 percent of respondents cited negative visual impacts and 62.5 percent for health and safety concerns. The results of the sales analysis show a statistically significant effect for properties close to a transmission line structure with a 10 percent to 15 percent price decrease at 30 to 45 feet, decreasing to five percent at 150 feet.
Proximity	Jackson (2010)	Case study based on a regression model to determine price differences between properties near transmission lines and those at least one-quarter mile away	Wisconsin	Rural wooded, open and wetlands	While controlling for general market conditions and type of land, the results showed that the prices of properties near a transmission line sold for 1.1 percent to 2.4 percent less than comparable properties further away. None of the differences were statistically significant.
Proximity	Rigdon (1991)*	Case study based on a regression model of properties sold and distance to a transmission line	Marquette County, Michigan	Rural, recreational	The results of the relationship between sales price and proximity to a transmission line were not statistically significant.
Proximity	Colwell and Foley (1979)* and Colwell (1990)	Case study based on a regression model that examines the sales of properties over 10 years with their distance from a transmission line (all within 400 feet)	Holiday Hills and Windsor Village in Decatur, Illinois	Urban residential	The results show that the selling price of a property increases as distance from the transmission line increases. The price increases at a decreasing rate, where the greatest price impact of six percent is between 50 and 200 feet from the line. The lines have little or no effect at distances beyond 200 feet.

Literature Review for Transmission Line and Housing Value Studies (Continued)

TYPE OF EFFECT	AUTHOR(S)	STUDY TYPE	LOCATION	PROPERTY TYPE	IMPACTS ON PRICE
Proximity	Hamilton and Schwann (1995)	Case study based on a regression model of property sales in close proximity to transmission lines	Vancouver, Canada	Urban residential	The results show that proximity was significant with respect to depreciation in property prices. The properties adjacent to a line lose 6.3 percent of value, due to visual impact. The properties further away from a line lose on average one percent of their value. Neither height nor voltage of the line had a significant impact.
Proximity	Des Rosiers (2002)	Case study based on a regression model of property sales over 5 years in three neighborhoods with transmission lines	Brossard, Montreal County, Canada	Urban residential	The results show that properties adjacent to a transmission line experience an average of a 9.6 percent drop (of the mean house price). Properties one to two lots away benefit from a market premium of 7.4 percent to 9.2 percent due to increased visual clearance. The properties at a mid-span distance experience a 4.7 percent drop because lines cause a visual obstruction. Properties with limited views of the line experience a 2.8 percent to 3.8 percent premium due to improved visual clearance. The net visual difference between the positive and negative aspects of proximity is highest between 50 and 100 feet from the transmission line, and diminishes quickly and completely beyond 150 feet.
Proximity and visual impact	Chalmers and Voorvaart (2009)*	Case study based on regression model to examine the property sales with proximity to and visibility of transmission lines	Connecticut and Massachusetts	Urban residential	The proximity to transmission lines was found to have an insignificant effect on sales price. The effects of the visibility of the transmission line structures were found to not have any significant effect on sales price.
Proximity	Wolverton and Bottemiller (2003)	Case study based on analysis of covariance of sales prices of properties and proximity to a transmission line	Portland, Vancouver and Seattle	Urban residential	The results show that property prices are not significantly affected by the presence of a transmission line. The data shows no difference in appreciation rates between homes close to a transmission line and those further away.

Literature Review for Transmission Line and Housing Value Studies (Continued)

TYPE OF EFFECT	AUTHOR(S)	STUDY TYPE	LOCATION	PROPERTY TYPE	IMPACTS ON PRICE
Proximity	Boyer et al., (1978)*	Case study based on regression model of per acre agricultural property values and proximity to transmission lines Public Perception survey	Eastern Canada	Rural agricultural	The results show that the per acre values were 16 percent to 29 percent lower for properties near or on the transmission line path than similar properties further away. The adverse effects of proximity were largest on smaller properties. The impacts of the transmission line did not seem to be related to the voltage or physical size of the line. The transmission lines were met with the strongest public opposition during the planning and construction phases but their impact on the affected public's perception diminished over time as the lines became neutral components of the landscape.
Proximity	Goodrich-Mahoney, J., (2003)*	Case study based on regression model of property values and proximity to transmission lines	Entire U.S.		The results show the potential overall reduction in property price ranges from zero percent to 6.3 percent. More expensive properties are more likely to experience a reduction in price than less expensive properties. Smaller properties are more likely to experience negative effects of prices than larger properties. The adverse effects on selling price and property value are greatest immediately after a new transmission line is built, then diminish over time. Effects on sales prices are high for properties closest to the power lines (within 200 feet).
Proximity	Davis (2008 and 2010)	Case study analysis of household-level 2000 Census data of property values of neighborhoods where power plants were opened in the 1990s	Entire U.S.	Urban and rural residential	Housing values and rents of neighborhoods close to the power plants (as converging transmission lines) decreased by three percent to five percent between 1990-2000 compared to neighborhoods farther away. These declines are found in properties within two miles of the power plants.

Literature Review for Transmission Line and Housing Value Studies (Continued)

TYPE OF EFFECT	AUTHOR(S)	STUDY TYPE	LOCATION	PROPERTY TYPE	IMPACTS ON PRICE
Proximity	Kinnard and Dickey (1995)	Review of case studies using multiple regression analysis on property values and proximity to transmission lines	New York, Maine, California	Urban residential	The studies generally show that the observed negative price, marketing time and sales volume effects of properties close to a transmission line are not statistically significant. The California case showed negative price effects between five percent and nine percent in properties within 200 feet of the transmission. These effects decreased over four to 10 years as trees and shrubbery grew to screen out the view of the transmission line.
Proximity	Real Estate Appraisal Litigation, LLC (n.d.)	Case study based on regression model of property values	Tucson, Arizona	Urban residential	Loss in value for an improved single-family residential property close to power lines can range from 4.13 percent to 13.67 percent based on the analysis contained in the case study, and up to 25 percent based on some literature.
Proximity	Kielisch (2006)	Match pair analysis isolating the impact of the presence of a 345kV electric transmission line	Marathon County, Wisconsin	Rural vacant agriculture and recreational property	Impact on property values for vacant agriculture and recreational property ranged from a low of 15 percent when the power line traverses across the back fence line of a 20 or 40 acre parcel, up to 34 percent when it bisects a parcel along the quarter line.
Proximity	Rolling and Biller (2006)	Multiple regression analysis using property sales data from five counties	Northern Wisconsin	Rural vacant land subject to easement	On average, vacant rural land analyzed in the study area appeared to experience no more loss in value than 1 percent per one percent of land subject to easement. If compensation is paid at 100 percent of the fee value for the easement strip, in most cases there is very little room left for damages to the remainder.

Literature Review for Transmission Line and Housing Value Studies (Continued)

TYPE OF EFFECT	AUTHOR(S)	STUDY TYPE	LOCATION	PROPERTY TYPE	IMPACTS ON PRICE
Proximity	Kielisch (n.d.)	Literature study	N/A	Various	Kielisch (2006, 2009) study of agricultural and recreation land in Clark County, Wisconsin found the land sales with an electric transmission line sold for 23 percent less than comparable land sales without a transmission line, and the more severe the location of the power line the greater was the loss of value. Rolling & Company (2005) study of property sales near a transmission line corridor but not directly encumbered by the transmission line in northeast Wisconsin found easement lots sold at approximately 12 percent less than lots located over 200 feet from the transmission lines and there was no clear impact on proximity lots – those that lie within 200 feet from the easement area but are not directly subject to the easement. Bolton (1993) study found that assessed values of properties that adjoined a power line easement had a 12.8 percent to 30.7 percent lower assessment than the average homes not on the line, but in the same area; and overall, homes adjoining transmission line easements took six times longer to sell and experienced a 10 percent to 30 percent loss in value.

*Additional references: articles cited within previous literature reviews

This page intentionally left blank.

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 9, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 1
(P-9, ACC Exhibit E-1)
(Pulte's Festival Ranch)

3. VRM Class
VI and NA (non-BLM land)

4. Location
TRS T4N, R4W, Sec 21
GPS N 33° 40' 31.92"
W 112° 40' 37.09"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat, smooth, linear, directional FAR triangular, rounded, linear	NEAR tall to short, linear, rounded FAR linear, parallel, curving	NEAR linear, geometric, directional, rectangular, triangular
LINE	NEAR bold, horizontal, straight FAR diagonal, horizontal, smooth to rugged	NEAR vertical, curving and complex FAR indistinct	NEAR vertical, horizontal, diagonal, parallel
COLOR	NEAR tan, reddish tan FAR bluish brown, indistinct	NEAR green, dark green, olive, brownish tan, light tan FAR indistinct	NEAR brown, gray, metallic, white
TEX-TURE	NEAR fine, smooth FAR smooth	NEAR feathery, dotted FAR smooth	NEAR smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appear flat
LINE	N/A	N/A	Strong vertical and horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X		X						X
Line	X					X						X
Color		X				X						X
Texture				X		X						X

2. Does project design meet visual resource management objectives?
☒ Yes ☐ No
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 9, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The addition of the proposed transmission line to the landscape as viewed from KOP 1 adds a series of strong vertical lines created by the monopole structures, which repeat the vertical lines of the fence in the foreground and contrast strongly with the predominant horizontal lines in the landscape. The conductors are visible and add several subtle horizontal lines to the landscape, which repeat the horizontal line at the skyline as well as the other more subtle horizontal lines in the vegetation patterns. The gray color of the poles contrasts with the predominantly light tans and browns of the landscape. The poles appear smooth, moderately contrasting with most of the vegetation in the landscape that creates a soft, feathery appearance. The monopoles in the foreground weakly contrast with the faint lattice towers visible in the background. Overall, addition of the transmission line infrastructure focuses the viewer's attention on the transmission line, moderately contrasts with the surrounding natural environment, and modifies the sense of naturalness of the environment to more development.

As viewed from KOP 1, the proposed transmission line would meet the VRM Class IV objectives established for this portion of the project because the description for the class allows for major modification of the environment that may dominate the view and focus the viewer's attention.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 10, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 2
(P-8, ACC Figure 3-7)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T4N, R4W, Sec 14
GPS N 33° 41' 22.61"
W 112° 38' 14.67"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat, linear FAR rugged, pyramidal, rounded	NEAR transparent, fan shaped, rounded, flat FAR indistinct	FAR geometric, parallel, tall, short, blocky, regular
LINE	NEAR horizontal, straight FAR diagonal, angular, parallel, curving	NEAR curving, diagonal FAR indistinct	FAR vertical, horizontal, diagonal, straight, broken
COLOR	NEAR reddish tan, tan, light gray FAR brown, grayish brown,	NEAR green, olive, brown, tan FAR olive	FAR dark gray, white, reddish tan, reddish brown
TEX-TURE	NEAR smooth FAR smooth, striated	NEAR smooth, feathery, patchy, dotted FAR smooth	FAR smooth, uniform, dense

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appear flat
LINE	N/A	N/A	Strong vertical, subtle horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X		X					X	
Line	X					X					X	
Color		X					X				X	
Texture				X		X						X

2. Does project design meet visual resource management objectives?
☒ Yes ☐ No
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 10, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The addition of the proposed transmission line to the landscape as viewed from KOP 2 adds a series of strong vertical lines created by the monopole structures, which repeat the vertical lines of the nearby power line and contrast strongly with the predominant horizontal lines in the landscape. The vertical lines of the lattice structures in the background are faint and subdued, and only vaguely repeat the vertical lines of the monopoles. The conductors are visible and add several subtle horizontal lines to the landscape, which repeat the horizontal line at the skyline. The gray color of the poles contrasts with the predominantly light tans and browns of the landscape. The poles appear smooth, moderately contrasting with most of the vegetation in the landscape that creates a soft, feathery appearance. The proposed transmission line moderately contrasts with the surrounding natural environment, focuses the viewer's attention, and modifies the sense of naturalness of the environment to more development.

As viewed from KOP 2, the proposed transmission line would meet the VRM Class IV objectives established for this portion of the project because the description for the class allows for major modification of the environment that may dominate the view and focus the viewer's attention.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb 13, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 3
(P-6, ACC Exhibit E-2)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T5N, R3W, Sec 3
GPS N 33° 48' 19.00"
W 112° 33' 48.53"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat to gently rolling, concave and convex linear FAR jagged, rounded, trapezoidal	NEAR tall to short, linear, rounded to oval, solid to transparent FAR linear, rounded, indistinct	NEAR linear, flat, prominent, tall, directional, rectangular FAR linear, tall
LINE	NEAR horizontal, straight, parallel FAR diagonal, curvilinear, subangular	NEAR vertical, curvilinear FAR vertical, curvilinear, indistinct	NEAR horizontal, vertical, bold, parallel, perpendicular, geometric FAR vertical, parallel
COLOR	NEAR reddish tan, gray FAR dark brown, bluish gray, reddish brown	NEAR green, dark green, olive, tan, reddish tan, reddish brown FAR dark green, indistinct	NEAR metallic, gray, dark gray, brown, white, yellow, red FAR dark gray, brown
TEX-TURE	NEAR fine FAR fine, striated	NEAR feathery, stippled, contrasting, stippled FAR scattered, smooth	NEAR smooth FAR smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appear flat
LINE	N/A	N/A	Strong vertical and horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS	Form				X		X					X	
	Line	X					X				X		
	Color		X				X						X
	Texture				X		X						X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb 13, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 3 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

The use of monopoles in this portion of the project area is recommended to blend with the monopoles that are present for the adjacent power line. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 8, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 4
(P-5, ACC Figure 3-8)
(Thunder Ridge Airpark)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T6N, R3W, Sec 33
GPS N 33° 49' 25.90"
W 112° 34' 22.01"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat to gently rolling FAR domed, triangular	NEAR tall to short, linear, rounded, complex FAR indistinct	NEAR geometric, solid, cubic, linear, curving FAR not visible
LINE	NEAR horizontal FAR horizontal to diagonal	NEAR vertical, diverging, straight, curvilinear FAR indistinct	NEAR bold, straight, parallel, curvilinear, horizontal, vertical, diagonal FAR not visible
COLOR	NEAR reddish tan, light gray FAR gray brown, dark gray	NEAR green, dark green, olive, gray, light tan FAR indistinct	NEAR white, off white, dark gray, red, reddish tan, FAR not visible
TEX-TURE	NEAR smooth to granular FAR fine to medium	NEAR feathery, dense to sparse FAR smooth	NEAR smooth, matte, uniform FAR not visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appear flat
LINE	N/A	N/A	Strong vertical and subtle horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form				X	X						X	
Line		X				X					X	
Color			X					X			X	
Texture			X			X						X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 8, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The portion of the proposed project visible from KOP 4 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended except where structures would be in close proximity to sensitive viewers, such as residents and communities. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 6, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 5
(viewpoint 135)
(SR 74, 235 Avenue)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T6N. R3W, Sec 16
GPS N 33° 51' 19.331"
W 112° 34' 34.244"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka, Schelle Davis, Don Applegate

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat to gently rolling FAR prominent, jagged	NEAR tall to short, transparent FAR indistinct	NEAR linear, flat FAR low, rectangular, tall, linear
LINE	NEAR indistinct FAR gently diagonal, parallel	NEAR vertical, rounded FAR indistinct	NEAR vertical, horizontal, parallel FAR horizontal, vertical, straight
COLOR	NEAR light tan FAR bluish dark gray	NEAR olive, light green, green, brown, tan FAR gray	NEAR dark gray, light gray, white FAR white, light, flashing white light
TEX-TURE	NEAR smooth to granular FAR smooth to course	NEAR feathery, scattered FAR smooth	NEAR smooth FAR smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Short, thin, fine vertical
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X				X
Line			X				X				X	
Color			X				X					X
Texture				X				X				X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 6, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The portion of the proposed project visible from KOP 5 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 6, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 6
(Photopoint 134)
(SR 74 by 227 Avenue)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T6N, R3W, Sec 23
GPS N 33° 50' 58.733"
W 112° 32' 36.794"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka, Schelle Davis, Don Applegate

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat to rolling FAR prominent (White Tank Mts.), jagged	NEAR tall to short, transparent FAR indistinct	NEAR linear, flat FAR blocky
LINE	NEAR flat to indistinct, parallel FAR diagonal to gently diagonal, parallel (drainages)	NEAR vertical, rounded FAR indistinct	NEAR horizontal, vertical, parallel, straight FAR horizontal, small
COLOR	NEAR light tan, reddish tan FAR bluish dark gray	NEAR olive, light green, green, brown, reddish tan, light tan FAR gray	NEAR metallic, dark gray, gray, white, yellow, reddish brown FAR white
TEX-TURE	NEAR smooth FAR smooth to course	NEAR feathery, scattered FAR smooth, indistinct	NEAR smooth FAR smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	N/A
LINE	N/A	N/A	Short, thin, fine vertical
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X				X
Line		X					X				X	
Color			X				X					X
Texture				X				X				X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 6, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 6 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 6, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 7
(Photopoint 133)
(211 Avenue)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T6N, R3W, Sec 25
GPS N 33° 49' 58.751"
W 112° 30' 58.436"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat to gently rolling FAR prominent (White Tank Mts.), jagged	NEAR tall to short, transparent FAR indistinct	NEAR blocky, short, tall FAR blocky
LINE	NEAR indistinct FAR gently diagonal, parallel (drainages)	NEAR vertical, rounded FAR indistinct	NEAR vertical, horizontal, geometric FAR horizontal and vertical, geometric
COLOR	NEAR light tan FAR bluish dark gray	NEAR olive, light green, green, brown FAR gray	NEAR metallic, flashing white (light), brown, green, white, red FAR metallic
TEX-TURE	NEAR smooth FAR smooth to course	NEAR feathery FAR smooth	NEAR smooth FAR smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Strong vertical, subtle horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form				X		X				X		
Line	X					X					X	
Color			X				X					X
Texture				X		X						X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 6, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The portion of the proposed project visible from KOP 7 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended except where structures would be in close proximity to sensitive viewers, such as residents and communities. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 13, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 8
(Photopoint 113)
(SR 74 and gravel operations road)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T6N, R2W, Sec 27
GPS N 33° 50' 6.551"
W 112°27' 46.712"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR rolling, rounded, linear FAR flat, trapezoidal, domed, triangular	NEAR linear, rounded, low to high, solid to transparent FAR linear, indistinct	NEAR flat, linear FAR not noticeable
LINE	NEAR horizontal, diagonal, parallel FAR horizontal, diagonal, curving, angular	NEAR vertical, fan shaped, straight, curving FAR vertical, indistinct	NEAR horizontal, vertical, parallel FAR not noticeable
COLOR	NEAR gray, reddish tan FAR bluish gray, brownish gray	NEAR green, dark green, olive, reddish tan, brown, tan FAR indistinct	NEAR dark gray, white, yellow, reddish brown FAR not noticeable
TEX-TURE	NEAR smooth to granular FAR smooth, striated	NEAR scattered, feathery, stippled FAR scattered, indistinct	NEAR smooth FAR not noticeable

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Tall strong vertical and subtle horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			X			X					X	
Line		X				X				X		
Color				X			X					X
Texture			X			X						X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 13, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 8 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 29, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 9
(P-4, ACC Exhibit E-4 and E-5)
(SR 74 at 179 Ave. alignment)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T6N, R2W, Sec 27
GPS N 33° 50' 0.54"
W 112° 27' 15.64"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat to rolling FAR trapezoidal, triangular	NEAR short to tall, linear, rounded, contrasting FAR indistinct	NEAR linear, short, long FAR none noticeable
LINE	NEAR curvilinear, horizontal FAR horizontal, diagonal	NEAR vertical, straight, curvilinear, soft FAR indistinct	NEAR parallel, perpendicular FAR none noticeable
COLOR	NEAR tan, gray FAR dark, bluish gray	NEAR dark green, green, olive, tan, brown, gray FAR	NEAR dark gray, white, yellow, reddish brown FAR none noticeable
TEX-TURE	NEAR smooth FAR smooth	NEAR clumped, feathery, scattered, stippled FAR smooth	NEAR smooth FAR none noticeable

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Short vertical and short, faint horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST		FEATURES												2. Does project design meet visual resource management objectives? ☐ Yes ☐ No N/A (Explain on reverse side)
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				3. Additional mitigating measures recommended? ☒ Yes ☐ No (Explain on reverse side)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form				X			X					X	Evaluator's Names
	Line			X					X			X		Schelle Davis Date: 05/15/12
	Color				X				X				X	
	Texture				X				X				X	

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 29, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 9 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 3, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 10
(Photopoint 114)
(Boulders Staging Area (hilltop))

3. VRM Class
non-BLM land

4. Location
TRS T6N, R2W, Sec 23
GPS N 33° 50' 36.173"
W 112° 26' 29.048"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR rolling FAR rounded, pyramidal, moderate steepness	NEAR linear and narrow, rounded, high to low FAR regular, few, indistinct	NEAR linear, long, short, flat FAR rectangular, low, diagonal
LINE	NEAR horizontal to diagonal, rounded FAR horizontal, diagonal, smooth to rugged, converging	NEAR vertical, hard and soft, curving FAR weak, simple	NEAR geometric, horizontal, vertical, straight, curving, parallel FAR angular, horizontal, broken, curving
COLOR	NEAR reddish tan, gray FAR dark gray, reddish brown, blue-gray in far distance	NEAR green, olive, yellow green, brown, gray FAR gray, dark green, monotone	NEAR brown, dark gray, mosaic FAR white, gray
TEX-TURE	NEAR smooth to granular FAR smooth, directional	NEAR spikey, striped, feathery, stippled FAR smooth to medium, uniform, stippled	NEAR smooth, granular, striped FAR smooth, clumped, scattered

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Medium, thin, vertical
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST		FEATURES												2. Does project design meet visual resource management objectives? ☐ Yes ☐ No N/A (Explain on reverse side)
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				3. Additional mitigating measures recommended? ☒ Yes ☐ No (Explain on reverse side)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form		X					X				X		Evaluator's Names
	Line		X					X				X		Schelle Davis Date: 05/15/12
	Color			X				X					X	
	Texture				X				X				X	

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 3, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The monopoles appear as a series of short vertical lines in the middle ground that break the skyline where there is not a backdrop of mountains, and repeat the short vertical lines created by the numerous saguaros. Where the monopoles break the skyline the vertical lines contrast strongly with the horizontal line at the skyline. From this distance and under these lighting conditions, the conductors would not be visible. The scene is backlit, resulting in the monopoles appearing light gray and contrasting with the background of the gray-green colors in the vegetation in the middle ground. Some development is visible as dots in the background, but because the development is distant and appears to be a subtle and small part of the view. The transmission line in the middle ground does not appear to be a continuation of the development in the foreground or background, rather new development in the middle ground; it adds a sense of development, moderately contrasting with the natural appearing and scenic view.

While KOP 10 is located within the SRMA and RMZ, the portion of the Project visible from KOP 10 would not be on BLM-administered public lands; therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 5, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 11
(Photopoint 117)
(LP 9 Alt A OHV route)

3. VRM Class
N/A (non-BLM land)

4. Location
TRS T6N, R2W, Sec 2
GPS N33° 53' 28.091"
W112° 26' 22.754"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka, Schelle Davis, Don Applegate

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR rolling, lumpy, peaked, pyramidal FAR flat, jagged, pyramidal	NEAR contrasting linear and rounded, high and low, vertical, narrow FAR smooth, regular, solid	NEAR flat to rolling, rounded FAR flat, horizontal, long, rectangular
LINE	NEAR horizontal, rounded to diagonal, curvilinear, jagged FAR horizontal, jagged, bold mountains in distance	NEAR vertical, straight, sharp, curving, bold, soft, fan-shaped FAR continuous, weak	NEAR horizontal, straight, curvilinear FAR bold to weak, continuous to broken,
COLOR	NEAR tan, ochre, reddish brown, dark brown, gray FAR tan to dark brown	NEAR bright green, yellow green, gray green, gray, tan FAR gray green, gray, monotone blue in distance	NEAR gray, tan, green FAR white, gray, tan
TEX-TURE	NEAR granular FAR smooth, coarse, corrugated	NEAR spikey, feathery, stippled, striped FAR smooth, uniform	NEAR smooth FAR smooth, dotted, stippled

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	N/A
LINE	N/A	N/A	Tiny, thin, fine, vertical
COLOR	N/A	N/A	Dark gray
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X				X
Line				X				X				X
Color			X				X					X
Texture				X				X				X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 5, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The transmission line infrastructure would be difficult to see in the landscape from this KOP under most conditions. The construction of the proposed transmission line would remove vegetation and expose land. During the Operations and Maintenance phase, the ROW would be maintained clear of taller growing vegetation. From this KOP, these changes would be visible as a thin line of bare ground or different vegetation color than surrounding vegetation, depending on the stage of revegetation.

The portion of the proposed project visible from KOP 11 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) as is used in the existing transmission line, to the extent possible, would be recommended in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Jan. 17, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 12
(Photopoint 111)
(Quintero)

3. VRM Class
III and NA (non-BLM land)

4. Location
TRS T6N, R2W, Sec 24
GPS N 33° 50' 29.099"
W 112° 25' 18.932"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR smooth and flat to rough and angular FAR flat to rounded to pyramidal	NEAR linear and rounded, high and low, diverse FAR smooth and indistinct	NEAR geometric, linear, blocky FAR linear, geometric
LINE	NEAR horizontal to diagonal and rugged FAR horizontal to diagonal, straight to rounded to angular	NEAR horizontal, vertical, straight, curving, fan-shaped FAR weak	NEAR curvilinear, straight, diagonal, bold FAR horizontal, continuous to discontinuous
COLOR	NEAR dark gray, gray, tan FAR tan, dark brown, bluish gray	NEAR bright green, green, olive green, tan, FAR gray green, bluish gray in distance	NEAR gray, dark gray, brown, white, reddish brown, tan FAR white, reflective
TEX-TURE	NEAR smooth to rough FAR medium, striated	NEAR spikey, granular, feathery FAR smooth, uniform	NEAR smooth, medium FAR striated, scattered

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	A few medium vertical
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST		FEATURES												2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				3. Additional mitigating measures recommended? ☒ Yes ☐ No (Explain on reverse side)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form			X			X						X	Evaluator's Names
	Line			X				X					X	Schelle Davis Date: 05/15/12
	Color				X				X				X	
	Texture			X				X					X	

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Jan. 17, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The monopoles supporting the transmission line are most easily seen in this KOP where they are visible against the sky. Many of the poles are against a backdrop of distant mountains and are nearly invisible. The dark gray color of the poles blends well with the distant land forms. Where poles are visible, the vertical lines they create blend well with the numerous short vertical lines created by the saguaros. The area of moderate contrast between the monopoles and surrounding landscape is limited to a portion of the view; the complexity and scenic nature of the view absorbs most of the proposed transmission line with little effect to the scenic quality. As the viewer pans to the south and west the topography flattens out and the monopoles become skylined and more noticeable in the distance. In the evening when the lighting is different they may appear lighter in color and some poles may be more noticeable against the backdrop of the mountains, while poles that are skylined may be less noticeable. For the majority of the view the transmission line would be absorbed by the surrounding landscape, and where visible, would only weakly contrast.

The area is designated VRM Class III. As viewed from KOP 12, the proposed transmission line infrastructure is noticeable, and portions may be more or less noticeable and attract attention under different lighting conditions. However, the project would not dominate the view, and therefore would meet VRM Class III objectives.

Additional Mitigating Measures (See item 3)

After detailed engineering of structure locations is prepared, APS would work with the BLM to microsite individual structures to minimize visual impacts from the portion of the Project located on BLM-administered public lands. Micrositing would result in reduction in impacts to views of travelers on SR 74 and would be expected to reduce major impacts to some specific viewpoints within the linear KOP.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 5, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 13
(Photopoint 121)
(LP 1 (single track OHV trail))

3. VRM Class
III

4. Location
TRS T6N, R1W, Sec 29
GPS N 33° 50' 9.995"
W 112° 22' 46.250"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka, Schelle Davis, Don Applegate

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR gently rolling to hilly to angular, triangular FAR triangular, steep, jagged, flat, rounded	NEAR bold vertical, tall, rounded, fan-shaped FAR solid, simple, flat	NEAR rolling, flat FAR tall, horizontal grouping
LINE	NEAR smooth, diagonal, undulating FAR horizontal, angular, jagged	NEAR vertical, complex, indistinct FAR horizontal	NEAR curving, undulating, broken FAR vertical, horizontal
COLOR	NEAR gray, tan, brown FAR bluish-gray far mountains	NEAR olive, light green, dark green, yellow green, brown green FAR dark green, grays, tan punctuated by darker greens	NEAR gray, tan FAR white, gray, tan
TEX-TURE	NEAR rough, pebbly, smooth FAR coarse, smooth	NEAR coarse, spikey, patchy-clumped FAR medium, dotted	NEAR smooth FAR medium, scattered

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Medium vertical
COLOR	N/A	N/A	Dark gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST		FEATURES												2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side) 3. Additional mitigating measures recommended? ☒ Yes ☐ No (Explain on reverse side)
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form		X					X					X	Evaluator's Names
	Line	X						X					X	Schelle Davis Date: 05/15/12
	Color				X		X						X	
	Texture				X			X					X	

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 5, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The addition of the transmission line in the view adds a series of strong vertical lines that strongly contrast with the horizontal lines that are predominant in the view. From the perspective of this KOP only one pole would break the skyline, and the poles do not appear larger than the surrounding landscape elements. While there are numerous saguaros in the view they are dwarfed by the size of the monopoles, and the repetition of the vertical lines and dark colors is subtle. The conductors are faintly visible along the nearest monopoles, adding very subtle horizontal lines. Panning to the left, the viewer would see the transmission line scaling the nearby low hills with the poles and conductors skylined. In the simulation photo the poles are backlit, resulting in them appearing dark and harmonizing with the darker colors in the landscape. Under different lighting conditions the color of the poles may appear light gray or white and contrast with the surrounding landscape. The construction of the proposed transmission line would remove vegetation and expose land. During the Operations and Maintenance phase, the ROW would be maintained clear of taller growing vegetation. From this KOP these changes would be visible as a narrow strip of bare ground or different vegetation color than surrounding vegetation, depending on the stage of revegetation. Overall contrast of the transmission line with the surrounding landscape would be strong.

From KOP 13 the transmission line attracts attention, but it does not dominate the view, and therefore it would meet VRM Class III objectives.

Additional Mitigating Measures (See item 3)

After detailed engineering of structure locations is prepared, APS would work with the BLM to microsite individual structures to minimize visual impacts from the portion of the Project located on BLM-administered public lands. Micrositing would result in reduction in impacts to views of travelers on SR 74 and would be expected to reduce major impacts to some specific viewpoints within the linear KOP.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Jan. 18, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 14
(P-1, "1 thru 3,")

3. VRM Class
NA (non-BLM land)

4. Location
TRS T6N, R1W, Sec 35
GPS N 33° 48' 52.65"
W 112° 20' 43.81"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR rolling, convex to concave, rounded to subangular FAR rounded to pyramidal, symmetrical to asymmetrical	NEAR contrasting linear and rounded, tall to short, fan-shaped FAR rounded, indistinct	NEAR (two-track dirt road in area not visible from this KOP) FAR flat, indistinct
LINE	NEAR diagonal, curving FAR horizontal to diagonal, smooth to jagged	NEAR bold and vertical, curving, complex FAR indistinct	NEAR NA FAR horizontal
COLOR	NEAR reddish brown, reddish tan, gray FAR dull, muted, reddish brown, gray	NEAR green, brown, olive, greenish white, tan FAR dark green, indistinct	NEAR NA FAR white
TEX-TURE	NEAR directional, striped FAR smooth to course, indistinct	NEAR scattered, dotted FAR medium to smooth	NEAR NA FAR smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Short, thin, vertical
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			X				X					X
Line			X				X					X
Color			X				X					X
Texture				X			X					X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Jan. 18, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 14 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Jan. 18, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 15
(P-2, ACC exhibit E-6, E-7, E-8)
(Vistancia)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T5N, R1W, Sec 14
GPS N 33° 46' 20.54"
W 112° 20' 25.07"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat, domed FAR rounded and moderate to angular and steep	NEAR linear, rounded, oval FAR linear and rounded to indistinct	NEAR geometric, linear, rectangular FAR none noticeable
LINE	NEAR horizontal, diagonal, subangular FAR diagonal, smooth to rugged	NEAR vertical and sharp, curving and soft FAR vertical, curving, indistinct	NEAR vertical, horizontal, smooth, parallel FAR none noticeable
COLOR	NEAR tan, dark brown, gray, reddish brown, reddish tan FAR dark brown, reddish brown, reddish tan	NEAR green, dark green, tan FAR dark green, monotone	NEAR brown, , reddish brown, light gray, dark gray, white FAR none noticeable
TEX-TURE	NEAR smooth to medium, discontinuous FAR medium to course, discontinuous	NEAR random, scattered FAR medium, patchy	NEAR smooth FAR none noticeable

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Tiny, thin, fine, vertical
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form			X				X					X
Line			X					X				X
Color				X				X				X
Texture				X				X				X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Jan. 18, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 15 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Jan. 24, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 16
(Photopoint 103B)
Lake Pleasant Campground)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T6N, R1E, Sec 20
GPS N 33° 50' 51.521"
W 112° 16' 49.568"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR rolling, flat to rounded, FAR rolling, flat to rounded, pyramidal, jagged	NEAR linear, rounded, small to large FAR linear, rounded, indistinct	NEAR NA FAR linear, geometric
LINE	NEAR curving, horizontal to diagonal FAR straight to curving, horizontal to diagonal, angular	NEAR vertical, soft FAR indistinct	NEAR NA FAR horizontal, vertical, parallel
COLOR	NEAR reddish tan, gray, light gray, brown FAR reddish tan, brown, bluish gray in far distance	NEAR brownish tan, green, light green, dark green FAR green, bluish green, dark green, indistinct	NEAR NA FAR metallic, dark gray, gray white
TEX-TURE	NEAR fine to medium FAR smooth to medium, striated	NEAR spikey, feathery, patchy FAR fine to medium	NEAR NA FAR smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Short, thin, fine, vertical
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

	FEATURES											
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form			X				X					X
ELEMENTS: Line		X					X					X
ELEMENTS: Color		X				X						X
ELEMENTS: Texture				X				X				X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Jan. 24, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The portion of the proposed project visible from KOP 16 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 6, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 17a
(Photopoint 123)
(SR 74 by Waddell Canal)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T6N, R1E, Sec 28
GPS 33° 49' 40.607"
112° 15' 50.276"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka, Schelle Davis, Don Applegate

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR undulating to flat transition FAR rounded, rolling, domed, steep, inverted trapezoid	NEAR irregular and bold, patchy FAR soft and indistinct	NEAR long, cylindrical, vertical, symmetrical, rectangular, linear FAR vertical
LINE	NEAR curving, broken horizontal, diagonal, discontinuous FAR rugged, diagonal, curvilinear and somewhat horizontal, flowing	NEAR vertical, irregular FAR indistinct	NEAR vertical, broken, parallel, geometric FAR curving, horizontal, geometric
COLOR	NEAR light and dark tan, reddish tan, gray FAR brown, dark gray, tan	NEAR green, olive, gray, tan, dark brown FAR olive	NEAR brown, dark gray, white, yellow, metallic FAR metallic, white, brown, yellow
TEX-TURE	NEAR smooth FAR smooth	NEAR random, medium, somewhat rough FAR medium, stippled	NEAR smooth FAR smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Short, thin, fine, vertical
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			X				X					X
Line			X				X					X
Color			X				X					X
Texture				X				X				X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 6, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 17a would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

Lattice structures are recommended. The use of lattice structures would minimize visual impacts because the viewer would be looking through the lattice structure. Where the proposed transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency. Where the proposed transmission line would cross lands other than BLM-administered public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the landowner and APS.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 16, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 17b
(Photopoint 130)
(SR 74 by distinctive butte)

3. VRM Class
III

4. Location
TRS T6N, R1W, Sec 25
GPS 33° 50' 6.569"
112° 19' 14.522"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR bold, steep to gentle, rolling FAR rounded, somewhat triangular	NEAR linear, rounded, tall to short FAR linear, rounded, indistinct	NEAR flat, linear, curving, short, geometric FAR none noticeable
LINE	NEAR vertical, diagonal, horizontal FAR diagonal, smooth	NEAR vertical, straight, curving, radiating FAR indistinct	NEAR vertical, parallel, straight, curvilinear FAR none noticeable
COLOR	NEAR light tan, brown, light gray, reddish tan FAR reddish brown, dark, indistinct	NEAR olive, dark green, light green, tan, light gray FAR dark green, greenish gray	NEAR dark gray, reddish brown, white, yellow FAR none noticeable
TEX-TURE	NEAR stripped FAR smooth	NEAR scattered, feathery, stripped FAR fine to medium	NEAR smooth FAR none noticeable

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Medium to tall vertical, subtle to faint horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form	X					X					X	
Line	X					X					X	
Color		X				X					X	
Texture			X			X						X

2. Does project design meet visual resource management objectives?
☐ Yes ☒ No
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 16, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The addition of the transmission line in the view adds both strong vertical and horizontal lines through the center of the view and directly in front of the butte, which is the focus of the view. Numerous saguaros create short, dark vertical lines; however, the size and color of the poles are of such magnitude that they do not repeat the vertical lines in the landscape. The horizontal lines created by the conductors are subtle, but are in front of the undulating horizontal line at the skyline, and therefore contrast strongly. The poles appear cylindrical and uniform, moderately contrasting with the feathery to stippled appearance of the vegetation. The infrastructure interjects a sense of development moderately contrasting with the natural and scenic appearing landscape. Overall contrast of the transmission line with the surrounding landscape would be moderate.

The area is designated VRM Class III. When the transmission line is located at the periphery of the ACC-certificated route and when the crossing is in the distance, topography and vegetation would limit views of the infrastructure and distance would reduce its prominence in the landscape; under these conditions the transmission line would not dominate the view, and the proposed Project would meet the VRM Class III objectives. As travelers in either direction on SR 74 approach the crossings, at some point the crossing becomes prominent and dominates the view until the traveler passes under the crossing and it is no longer visible.

Approximately 0.30-mile either side of the crossing for a total of 0.60-mile of SR 74 the above criteria are present and the transmission line would dominate the view; VRM Class III objectives would not be met. The length of SR 74 within the linear KOP is 10 miles long; approximately 6 percent of the length of SR 74 within the linear KOP would not meet VRM Class III objectives due to the easternmost crossing.

Additional Mitigating Measures (See item 3)

After detailed engineering of structure locations is prepared, APS would work with the BLM to microsite individual structures to minimize visual impacts from the portion of the Project located on BLM-administered public lands. Micrositing would result in reduction in impacts to views of travelers on SR 74 and would be expected to reduce major impacts to some specific viewpoints within the linear KOP.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 16, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 17c
(Photopoint 17-C)
(SR 74 west of butte)

3. VRM Class
III

4. Location
TRS T6N, R1W, Sec 27
GPS 33° 50' 8.861"
112° 20' 33.680"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR rolling, rounded FAR rounded to pyramidal	NEAR linear, rounded, tall to short FAR rounded, indistinct	NEAR linear, curving, parallel FAR none noticeable
LINE	NEAR diagonal, smooth FAR diagonal, curvilinear	NEAR vertical, straight, curving, irregular FAR indistinct	NEAR vertical, short, parallel, curvilinear FAR none noticeable
COLOR	NEAR gray, tan, reddish tan FAR reddish tan, dark and indistinct	NEAR reddish brown, light brown, olive, green, dark green, light tan FAR blue-green, green-gray	NEAR dark gray, white, yellow, reddish brown FAR none noticeable
TEX-TURE	NEAR smooth FAR medium to smooth	NEAR scattered, stippled FAR stippled, indistinct	NEAR smooth FAR none noticeable

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Medium to short, thin, fine vertical
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST		FEATURES												2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				3. Additional mitigating measures recommended? ☒ Yes ☐ No (Explain on reverse side)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form			X				X					X	Evaluator's Names
	Line			X				X				X		Schelle Davis Date: 05/15/12
	Color			X				X					X	
	Texture				X				X				X	

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 16, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The addition of the transmission line in the view adds a series of vertical lines in the middle ground. Due to the distance between the KOP and the infrastructure the conductors are not visible and the poles appear as fine, light-colored lines against the landscape in the background. Under different lighting conditions the poles could appear lighter or darker, and be more or less noticeable. The vertical lines of the poles weakly contrast with the curvilinear horizontal lines in the landscape, and somewhat repeat the vertical lines created by the numerous saguaros. The distance between the KOP and the poles and the somewhat complex landscape allows the landscape to absorb the infrastructure. Overall contrast of the transmission line with the surrounding landscape would be weak.

The poles visible in the landscape would be located on BLM-administered public lands within the transportation corridor north of SR 74. The area is designated VRM Class III. As viewed from KOP 17c, the proposed transmission line infrastructure is noticeable, and portions may be more or less noticeable and attract attention under different lighting conditions. However, the Project would not dominate the view, and therefore would meet VRM Class III objectives.

Additional Mitigating Measures (See item 3)

After detailed engineering of structure locations is prepared, APS would work with the BLM to microsite individual structures to minimize visual impacts from the portion of the Project located on BLM-administered public lands. Micrositing would result in reduction in impacts to views of travelers on SR 74 and would be expected to reduce major impacts to some specific viewpoints within the linear KOP.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 16, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 17d looking west and south
(Photopoint 108)

3. VRM Class
N/A (non-BLM land)

4. Location
TRS T6N, R1W, Sec 32
GPS 33° 49' 28.235"
112° 23' 18.956

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR rounded, rolling, pyramidal FAR flat, jagged	NEAR linear, rounded, tall to short FAR linear, rounded, indistinct	NEAR linear, curving FAR none noticeable
LINE	NEAR curvilinear, diagonal FAR horizontal, diagonal	NEAR vertical, curvilinear FAR indistinct	NEAR horizontal, short vertical, parallel, perpendicular FAR none noticeable
COLOR	NEAR reddish tan, gray, dark brown FAR dark bluish gray	NEAR dark green, green, light green, yellow green, olive, reddish tan, brown FAR dark green, bluish green, indistinct	NEAR dark gray, metallic, brown, reddish brown, white, yellow FAR none noticeable
TEX-TURE	NEAR smooth, rough, directional FAR smooth	NEAR feathery, stippled, scattered, striated FAR stippled, uniform, smooth	NEAR smooth FAR none noticeable

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Tall, strong vertical and horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS	Form	X					X						X
	Line	X					X				X		
	Color			X				X					X
	Texture			X			X						X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 16, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 17d would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 16, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 18a
(Photopoint 132)
(Start of Hieroglyphics)

3. VRM Class
III and N/A (non-BLM land)

4. Location
TRS T6N, R2W, Sec 26
GPS 33° 49' 46.253"
112° 25' 57.890"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat, rolling, rounded FAR triangular, rounded, trapezoidal	NEAR linear, rounded, tall to short FAR rounded, indistinct	NEAR linear, curving FAR none noticed
LINE	NEAR horizontal, diagonal FAR diagonal, curvilinear	NEAR vertical, curvilinear FAR rounded, indistinct	NEAR horizontal, vertical, parallel, curvilinear, straight, geometric FAR none noticed
COLOR	NEAR reddish tan FAR dark brown, reddish tan, blue-gray	NEAR tan, yellowish tan, brown, olive, dark green, green, yellowish green, gray FAR blue-green, blue-gray	NEAR dark and light gray, yellow, orange, blue, white, metallic, reddish brown FAR none noticed
TEX-TURE	NEAR smooth FAR striated, smooth	NEAR feathery, scattered, stippled FAR more uniform, smooth	NEAR smooth FAR none noticed

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	N/A
LINE	N/A	N/A	Short to medium vertical and subtle horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form		X					X					X
Line		X					X					X
Color			X					X				X
Texture			X				X					X

2. Does project design meet visual resource management objectives?
☒ Yes ☐ No
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 16, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

Viewers from this KOP would see the transmission line infrastructure approaching SR 74 from the south, and then crossing to the north side of SR 74. The poles would be visible as a series of regularly spaced medium to strong vertical lines. The poles would intersect and weakly to moderately contrast with the irregular horizontal line at the skyline. The scenic nature of the landscape would help absorb the addition of the transmission line as viewed from this KOP, but the addition of the human development would moderately contrast with the surrounding natural environment. The appearance of the color of the poles would vary with the lighting conditions, but would weakly contrast either with the surrounding landscape or bright sky under any circumstance. Overall contrast of the transmission line with the surrounding landscape would be weak to moderate.

A portion of the poles would be on BLM-administered public lands designated VRM Class III. The poles would be noticeable and may attract attention, but because of the distance between the KOP and the poles, the transmission line would not dominate the view, and would meet VRM Class III objectives as viewed from KOP 18a.

Additional Mitigating Measures (See item 3)

After detailed engineering of structure locations is prepared, APS would work with the BLM to microsite individual structures to minimize visual impacts from the portion of the Project located on BLM-administered public lands. Micrositing would result in reduction in impacts to views of travelers on SR 74 and would be expected to reduce major impacts to some specific viewpoints within the linear KOP.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 16, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 18-B
(Photopoint 109)
(Start of Hieroglyphics)

3. VRM Class
III and N/A (non-BLM land)

4. Location
TRS T6N, R2W, Sec 25
GPS 33° 49' 38.279"
112° 25' 13.862"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat, rolling, rounded FAR triangular, rounded, trapezoidal	NEAR linear, rounded, tall to short FAR rounded, indistinct	NEAR linear, curving FAR none noticed
LINE	NEAR horizontal, diagonal FAR diagonal, curvilinear	NEAR vertical, curvilinear FAR rounded, indistinct	NEAR horizontal, vertical, parallel, curvilinear, straight, geometric FAR none noticed
COLOR	NEAR reddish tan, gray FAR dark brown, reddish tan, blue-gray	NEAR tan, yellowish tan, brown, olive, dark green, green, yellowish green, gray, reddish brown FAR blue-green, blue-gray	NEAR dark and light gray, yellow, white, metallic, reddish brown FAR none noticed
TEX-TURE	NEAR fine to medium FAR striated, fine to medium	NEAR feathery, diverging, scattered, stippled FAR more uniform, smooth, stippled	NEAR smooth FAR none noticed

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	N/A
LINE	N/A	N/A	Tall to medium strong to subtle vertical and strong to subtle horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST		FEATURES												2. Does project design meet visual resource management objectives? ☐ Yes ☒ No (Explain on reverse side)
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				3. Additional mitigating measures recommended? ☒ Yes ☐ No (Explain on reverse side)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form	X					X						X	Evaluator's Names
	Line	X					X					X		Schelle Davis Date: 05/15/12
	Color		X				X						X	
	Texture		X				X						X	

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 16, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The addition of the transmission line in the view adds strong vertical and horizontal lines at the crossing in the foreground, and a series of vertical lines that are less prominent to the north of SR 74. The poles in the foreground appear taller than the landscape in the background and contrast strongly with the undulating horizontal line at the skyline. The series of poles to the north of SR 74 are more distant, appear smaller, and somewhat repeat the vertical lines created by the numerous saguaros. The light color and smooth texture of the poles distinguish them from the surrounding darker and textured landscape. Overall contrast of the transmission line with the surrounding landscape would be strong.

The area is designated VRM Class III. As travelers in either direction on SR 74 approach the crossing, at some point the crossing becomes prominent and dominates the view until the traveler passes under the crossing and it is no longer visible. The crossing would dominate the view approximately 0.40-mile either side of the crossing for a total of 0.80-mile of SR 74 where the criteria are present, and the VRM Class III objectives would not be met. The length of SR 74 within the linear KOP is 10 miles long; approximately 8 percent of the length of SR 74 within the linear KOP would not meet VRM Class III objectives due to the westernmost crossing.

Additional Mitigating Measures (See item 3)

After detailed engineering of structure locations is prepared, APS would work with the BLM to microsite individual structures to minimize visual impacts from the portion of the Project located on BLM-administered public lands. Micrositing would result in reduction in impacts to views of travelers on SR 74 and would be expected to reduce major impacts to some specific viewpoints within the linear KOP.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 6, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 18c
(Photopoint 136)
(near summit)

3. VRM Class
III

4. Location
TRS T6N, R1W, Sec 28
GPS 33° 49' 31.835"
112° 22' 27.884"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka, Schelle Davis, Don Applegate

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR rolling, rounded, steep FAR flat, triangular, rounded, domed	NEAR jagged, contrasting, complex FAR indistinct	NEAR cylindrical, linear, curvilinear FAR none noticeable
LINE	NEAR curving, undulating, diagonal FAR horizontal, diagonal, curvilinear	NEAR vertical, indistinct FAR indistinct	NEAR vertical, horizontal, parallel FAR none noticeable
COLOR	NEAR reddish tan, reddish brown, medium brown, gray FAR blue-gray, tan, dark	NEAR browns, yellow-green, grays, mauve, olive, tan FAR greenish brown	NEAR metallic, dark gray, tan, reddish brown, green, white, yellow FAR none noticeable
TEX-TURE	NEAR lumpy, smooth FAR smooth, striated	NEAR patchy, feathery, rough, stippled FAR smooth	NEAR smooth FAR none noticeable

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Tiny, thin, vertical
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	N/A

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				X				X				X
Line				X				X				X
Color				X				X				X
Texture				X				X				X

2. Does project design meet visual resource management objectives?
☒ Yes ☐ No
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Dec. 6, 2011 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The simulated view from KOP 18c looks at the transmission line north of SR 74 as viewed by eastbound travelers. The transmission line is visible in the view from this KOP, but it is not noticeable and nearly impossible to locate in the photo simulation. Topography blocks foreground to middle ground views of the transmission line; the structures appear in the background as very small, fine light colored vertical lines that repeat the delineators in the foreground, and are thus difficult to locate. Contrast between the transmission line and the surrounding landscape would be unnoticeable, and therefore would meet VRM Class III objectives.

Additional Mitigating Measures (See item 3)

After detailed engineering of structure locations is prepared, APS would work with the BLM to microsite individual structures to minimize visual impacts from the portion of the Project located on BLM-administered public lands. Micrositing would result in reduction in impacts to views of travelers on SR 74 and would be expected to reduce major impacts to some specific viewpoints within the linear KOP.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 20, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 18d East
(Photopoint 107 East)
(Descending from high point on SR 74)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T6N, R1W, Sec 27
GPS 33° 50' 1.193"
112° 21' 27.248

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR rolling, rounded to flat FAR rounded to angular, distinct, steep to moderate	NEAR linear, rounded, tall to short FAR linear, rounded	NEAR linear, flat, curving FAR none noticeable
LINE	NEAR diagonal to horizontal FAR diagonal, curving	NEAR vertical, diverging, curvilinear FAR vertical, curvilinear	NEAR short vertical, parallel, geometric, perpendicular FAR none noticeable
COLOR	NEAR gray, tan FAR dark, brown, bluish gray	NEAR dark green, green, olive, brown, reddish tan, gray FAR dark green, indistinct	NEAR dark gray, white, yellow, brown, reddish brown, metallic FAR none noticeable
TEX-TURE	NEAR smooth FAR smooth to rough	NEAR feathery, stippled, scattered FAR stippled, smooth	NEAR smooth FAR none noticeable

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	N/A
LINE	N/A	N/A	Medium vertical and subtle horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS	Form		X					X					X
	Line		X					X				X	
	Color		X					X					X
	Texture			X			X						X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 20, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 18d would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)
The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 20, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 19
(Photopoint 110)
(SR 74 and Quintero)

3. VRM Class
NA (non-BLM land)

4. Location
TRS T6N, R2W, Sec 25
GPS 33° 49' 39.185"
112° 25' 15.578"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat to rolling, rounded FAR triangular, rounded to angular, flat	NEAR tall to short, rounded, linear FAR indistinct	NEAR linear, flat, short FAR none noticeable
LINE	NEAR horizontal, diagonal, curvilinear FAR horizontal, diagonal, jagged	NEAR vertical, curvilinear, diverging FAR indistinct	NEAR geometric, vertical, horizontal, parallel, perpendicular FAR none noticeable
COLOR	NEAR gray, tan FAR bluish gray	NEAR green, dark green, olive, tan, brown, gray FAR dark green, indistinct	NEAR metallic, dark gray, white, green, reddish brown, yellow FAR none noticeable
TEX-TURE	NEAR smooth FAR smooth	NEAR feathery, stippled, clumped FAR smooth	NEAR smooth FAR none noticeable

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Tall strong vertical and subtle horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			X			X					X	
Line		X				X				X		
Color				X			X					X
Texture			X			X						X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 20, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 19 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 20, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 20
(Photopoint 124)
(Castle Hot Springs R. and SR 74)

3. VRM Class
III

4. Location
TRS T6N, R1W, Sec 25
GPS N 33° 50' 5.423"
W 112° 18' 55.664"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR angular FAR gently rolling, flat	NEAR tall to short, linear, rounded FAR indistinct	NEAR flat, linear, short FAR none noticeable
LINE	NEAR diagonal FAR horizontal, diagonal, flowing	NEAR vertical, curvilinear, angular FAR indistinct	NEAR parallel, perpendicular, geometric, vertical, horizontal, diagonal FAR none noticeable
COLOR	NEAR tan, gray FAR dark	NEAR dark green, green, brown, gray, tan FAR dark	NEAR dark gray, metallic, white, reddish brown, yellow, green, brown, flashing red FAR none noticeable
TEX-TURE	NEAR smooth FAR smooth	NEAR feathery, stippled, scattered FAR medium to fine	NEAR smooth FAR none noticeable

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Tall strong vertical and strong horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS	Form	X					X						X
	Line	X						X		X			
	Color				X				X				X
	Texture		X				X						X

2. Does project design meet visual resource management objectives?
☐ Yes ☒ No
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B Feb. 20, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.

The addition of the transmission line in the view adds a pole and conductors in the foreground, just behind a low hill adjacent to SR 74, with poles and conductors going into the distance looking either direction (east or west). The pole somewhat repeats the vertical line of the saguaros in the landscape; however the pole is much larger, regular shaped, smooth, and differs in color, resulting in a strong contrast. The pole contrasts moderately with the undulating horizontal line at the skyline. The horizontal lines created by the conductors repeat the strong horizontal line created by the road and guard rail, and the undulating line at the skyline to a limited extent. The color of the pole blends to a limited extent with some of the colors seen in the vegetation, but its smooth texture would moderately contrast with the variety of textures in the landscape. Overall contrast of the transmission line with the surrounding landscape would be moderate to strong.

The area is designated VRM Class III. Travelers on Castle Hot Springs Road approaching this intersection would be slowing and coming to a stop. Because the transmission line would be in the center of the field of view, its proximity to other landscape features make it appear larger than its surroundings, and because travelers would come to a stop looking straight ahead, the transmission line would dominate the view from KOP 20 and would not meet VRM Class III. However, this situation would only last as long as the vehicle is stopped at the intersection (a few seconds or up to a couple of minutes while waiting for traffic to clear), until the traveler turns east or west on SR 74.

Additional Mitigating Measures (See item 3)

After detailed engineering of structure locations is prepared, APS would work with the BLM to microsite individual structures to minimize visual impacts from the portion of the Project located on BLM-administered public lands. Micrositing would result in reduction in impacts to views of travelers on SR 74 and would be expected to reduce major impacts to some specific viewpoints within the linear KOP.

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B April 6, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 21
(Caravaccio Lane & 213th Drive)

3. VRM Class
N/A (Non-BLM land)

4. Location
TRS T5N, R3W, Sec 1
GPS N 33°48'36.35"
W 112°31'16.94"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka, Dave Lawrence

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat to gently rolling FAR jagged to rounded, pyramidal	NEAR linear, rounded FAR indistinct	NEAR bold, cubic, linear, flat, rectangular, sequential FAR none noticeable
LINE	NEAR horizontal FAR diagonal, angular, smooth	NEAR vertical, circular FAR indistinct	NEAR horizontal, vertical, diagonal, hard, parallel FAR none noticeable
COLOR	NEAR tan, reddish brown, gray FAR tan, brown, dark red, gray	NEAR green, yellow, brown, blue-green, gray FAR dark green	NEAR dark red, brown, white, tan FAR none noticeable
TEX-TURE	NEAR smooth FAR smooth, rough	NEAR ordered, stippled, clumped / grouped in residential yards. Random, dense, course beyond yards FAR stippled, indistinct	NEAR smooth surfaces, ordered FAR none noticeable

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Medium to tall subtle vertical and horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS	Form				X			X		X			
	Line			X				X				X	
	Color			X				X				X	
	Texture				X			X					X

2. Does project design meet visual resource management objectives?
☐ Yes ☐ No N/A
(Explain on reverse side)

3. Additional mitigating measures recommended?
☒ Yes ☐ No
(Explain on reverse side)

Evaluator's Names

Schelle Davis Date: 05/15/12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B April 6, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 21 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Form 8400-04
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B April 6, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION A. PROJECT INFORMATION

1. Project Name
APS Sun Valley to Morgan Transmission Line EIS

2. Key Observation Point
KOP 22
(East of 211th Ave. (Carlise Road))

3. VRM Class
N/A (Non-BLM land)

4. Location
TRS T6N, R2W, Sec 31
GPS N 33°49'19.54"
W 112°30'54.81"

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION Evaluated by Dave Konopka, Dave Lawrence

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NEAR flat to gently rolling FAR West: none noticeable North (& South): jagged to smooth, rounded, pyramidal	NEAR linear, rounded, high and low FAR West: indistinct North (& South) indistinct	NEAR (excluding residence) linear, tall, short FAR flat, rectangular
LINE	NEAR horizontal FAR West: none noticeable North (& South): diagonal, curving, undulating	NEAR vertical, undulating, curvilinear FAR West: indistinct North (& South): indistinct	NEAR vertical, horizontal, parallel, geometric FAR horizontal
COLOR	NEAR tan, gray, dark red FAR West: none noticeable North (& South): tan, reds, browns	NEAR gray, yellow, green, black, dark red FAR West: indistinct North (& South): greens, indistinct	NEAR black, green, white, red, metallic, brown FAR metallic / white
TEX-TURE	NEAR smooth FAR West: none noticeable North (& South): rough, striated	NEAR stippled grouping, random FAR West: indistinct North (& South): smooth, stippled, indistinct	NEAR smooth, ordered FAR smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	N/A	N/A	Appears flat
LINE	N/A	N/A	Tall strong vertical and horizontal
COLOR	N/A	N/A	Gray
TEX-TURE	N/A	N/A	Smooth

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST	FEATURES												2. Does project design meet visual resource management objectives? ☐ Yes ☐ No N/A (Explain on reverse side)
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				3. Additional mitigating measures recommended? ☒ Yes ☐ No (Explain on reverse side)
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS: Form				X	X				X				Evaluator's Names
Line	X				X					X			Schelle Davis Date: 05/15/12
Color		X				X				X			
Texture	X				X						X		

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	Section A & B April 6, 2012 Section C & D
District	Phoenix
Resource Area	Hassayampa
Activity (program)	Utility Right-of-Way

SECTION D. (Continued)

Comments from item 2.
The portion of the proposed project visible from KOP 22 would not be on BLM-administered public lands, therefore determination of compliance with VRM class objectives is not applicable.

Additional Mitigating Measures (See item 3)

The surface of the monopoles would be treated to achieve a color similar to shadow gray or shale green on the BLM Standard Color Chart to blend with the surrounding landscape as viewed from a distance.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

Appendix 4B

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
	Unincorporated Maricopa County	Community Development	Planned development includes: Coyote Trails, Asante West, Broadstone Ranch, Warrick Properties, Roesner Ranch, Lake Pleasant, Grande Oasis, Peak View Estates Unit 2 and 3, Trail of Light, Walden Ranch, Rancho Maria, and Lake Pleasant Vistas.			Future	
City of Peoria	Peoria, Maricopa County	Community Development	Future large-scale master-planned projects are in various stages of design. One of these projects, West Wing Mountain, includes the dedication of hillside areas for public open space. Planned development includes Saddleback Heights, Quintero, Vistancia, Marisol Ranch, Cholla Hills, and Lake Pleasant Heights. Other developments include commercial projects such as Lake Pleasant Pavilions, Mountainside Crossing, Happy Valley Town Center, and the Peoria Regional Hospital. Peoria has a Municipal Planning area of approximately 233 square miles and a population of 154,065 (City of Peoria 2013).			Past, Present, Future	City of Peoria 2010
City of Surprise	Surprise, Maricopa County	Community Development	City of 115,000 people was just one square mile of farmland back in 1938 when Flora Mae Statler founded it. Planned development includes Grand Vista (see Housing Development).	23,370 acres of residential zoning; 243 acres for future commercial development		Past, Present, Future	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Town of Buckeye	Buckeye, Maricopa County	Community Development	As of the census of 2010, there were 50,876 people residing in the town. As of the census of 2000, there were 2,158 households, and 1,624 families residing in the town. The population density was 44.8 people per square mile. There were 2,344 housing units at an average density of 16.1 per square mile. There are currently nearly 30 master planned communities planned for Buckeye. Such master planned communities under development in which homes are occupied include Sundance, Verrado, Westpark, Tartesso and Festival Ranch. Other unbuilt planned communities within Buckeye include Douglas Ranch (planned for nearly 300,000 inhabitants), Grand Vista, Sun Valley Villages, Spurlock Ranch, Trillium, Elianto, Westwind, Silver Rock, Sienna Hills, Henry Park, Southwest Ranch and Montierre. Sundance Towne Center, a shopping center developed by Vestar Development in the Sundance community, opened in 2007.	2,175 acres of future development		Past, Present, Future	
69kV Line	Maricopa County	Energy	Two 69kV transmission lines are present within the study area, primarily in developed and rural-residential areas along portions of U.S. 60 (Grand Avenue) and parallel to the Sun Valley Parkway.	40 foot ROW		Existing	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Cotton Center Solar Plant	Gila Bend, AZ	Energy	The solar plant sits on former agricultural land in Gila Bend's Solar Overlay Zone. The Zone is a designated geographic area that allows the permitting process for photovoltaic projects to be fast tracked. The plant's 75,168 photovoltaic panels will be placed in 522 rows and follow the sun across the sky using a single-axis tracking system. The energy produced will connect to the electric grid through a 12kV line at the Cotton Center Substation located only 1/2 mile north of the project.	145 acres	SocioEc only	Existing	APS website and www.pv-tech.org/projectfocus/cotton_center_arizona
Glendale Energy Power Plant	City of Glendale	Energy	The Glendale Energy Power Plant came online in 2010; it is the first energy from biogas plant for APS. The decomposition of organic materials at landfills creates a highly-flammable gas consisting mainly of methane. Instead of simply burning the gas for safety reasons the Glendale Energy Power Plant uses the biogas as fuel for two large combustible engines, similar to automobile engines. However, at the power plant, the engines are much larger and instead of turning wheels, the engine turns a shaft connected to a generator that produces electricity. Landfill gas is one of the few renewable energy sources that is not intermittent, giving it the ability to produce electricity 24 hours a day.		SocioEc, Air	Existing	APS website
Humbug Substation	near SR 74 and 99th Avenue	Energy	Distribution substation with 69kV and 12kV facilities.	0.55 acres	All	Existing	
Lakeside Substation	north of Cloud Road along New River Road	Energy	Distribution substation with 69kV and 12kV facilities.	Approx. 1.4 acres developed	All	Existing	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Luke Air Force Base Solar Project	Glendale, AZ, north of Phoenix	Energy	The plant will use 52,000 high-efficiency SunPower solar panels. A single-axis tracking system will allow the panels to follow the sun across the sky, capturing 25 percent more energy than if the panels were stationary. The plant's 14-megawatt capacity is equivalent to the energy needs of 3,500 Arizona homes or 50 percent of the Base's energy needs. 14 megawatts. Commercial operation is expected in 2012/2013. Cultural excavations currently underway.	101 acres	Air Resources, SocioEc	Future	APS website; ww.bloomberg.com
Mead to Eastwing 500 kV Transmission Line (WAPA)	Maricopa County	Energy	A single 500 kV line originates from the southwest and extends east along the southern portion of the study area to the Westwing Substation. Western Area Power Administration.	200 foot ROW		Existing	
Morgan Substation	30 miles northwest of Phoenix; west of New River Road along Cloud Road	Energy	Regional Extra High Voltage substation containing both 500kV and 230kV facilities operated by APS	75 acre site (59 acres developed)		Existing	
Morristown Substation	Southeast of Morristown, near 251st 29 Avenue and U.S. 60/Grand Avenue	Energy	Distribution substation with 69kV and 12kV facilities.	1.4 acres	SocioEc, Air, Golden Eagles, Visual	Existing	
Navajo to Westwing 500kV Lines (APS)	Maricopa County	Energy	Two 500kV transmission lines originate to the north of the study area and cross the eastern portion, extending south and passing the Morgan and Raceway substations before terminating at the Westwing Substation.	330 foot ROW		Existing	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
New Waddell to Westwing 230kV Line (WAPA)	Maricopa County	Energy	One 230kV transmission line originates at the Humbug substation near Lake Pleasant and continues south, passing Morgan and Raceway substations before terminating at the Westwing Substation. Western Area Power Administration.	150 foot ROW		Existing	
Oberlin Substation	near Patton Road and 243rd 28 Avenue	Energy	Temporary Sub-Transmission substation with 69kV and 12kV facilities.	2.2 acres		Existing	
Palo Verde Nuclear Generating Station	About 55 miles west of downtown Phoenix	Energy	The Palo Verde Nuclear Generating Station has been the largest power producer of any kind in the United States since 1992. Its three units are capable of generating more than 4,000 megawatts of electricity. Because of its desert location, Palo Verde is the only nuclear plant in the United States that does not sit on a large body of water. Instead, it uses treated effluent from several area municipalities to meet its cooling water needs, recycling approximately 20 billion gallons of wastewater each year. Palo Verde, which has an economic impact of approximately $1.8 billion annually and is the largest single commercial taxpayer in Arizona, is operated by APS and is owned by a consortium of seven utilities in the Southwest. APS owns 29.1 percent of the plant.		SocioEc	Existing	APS website
Palo Verde to Westwing 500 kV Transmission Lines (SRP)		Energy	Two 500 kV lines originate to the south of the study area and then extend east, parallel to the Western line, to the Westwing Substation.	330 foot ROW		Existing	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Paloma Solar Project	Gila Bend	Energy	The 17 megawatt Paloma Solar Plant sits on land that was formerly an alfalfa farm. The land is within the town of Gila Bend's Solar Field Overlay Zone. The plant will use 275,000 thin-film photovoltaic panels mounted on fixed-tilt steel frames. This marks the first time APS is using thin-film technology for one of its solar plants. Energy will go on the grid at the Cotton Center substation located 1.5 miles north of the power plant. Construction completed November 2011.		SocioEc	Existing	APS website
Palo Verde to Sun Valley	Begins at Palo Verde Generating Station to southwest portion of Project Area	Energy	APS has planned and completed the permitting for a new approximately 43 mile long 500kV transmission line from the Palo Verde Generating Station area to the future Sun Valley Substation (through the future Delaney Substation).	200-foot ROW	All	Future	APS
Raceway Substation	near SR 74 and 99th 24 Avenue	Energy	High Voltage substation containing 230kV, and 69kV facilities.	10 acre site (7 acres developed)	All	Existing	
Redhawk Power Station	Located near the Palo Verde Nuclear Generating Station west of Phoenix	Energy	The Redhawk® Power Station, which began operating in mid-2002, is comprised of two identical 530-megawatt natural gas-fueled combined-cycle units. The plant is owned and operated by APS. The station employs treated effluent purchased from Palo Verde to meet its cooling needs. Redhawk also is a zero liquid discharge site, meaning that the cooling water is continually reclaimed and reused and no water is released to the environment.		SocioEc	Existing	APS website

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Solana Generating Station	Gila Bend	Energy	This solar generating station will generate 250 megawatts. It will cover 3 square miles and contain 2,700 parabolic trough collectors. Located on what is currently agricultural land, the power plant will use 75 percent less water than the current use of the property. Solana will use Concentrating Solar Power (CSP) technology with thermal energy storage. CSP technology uses heat from the sun to generate electricity; parabolic mirrors will focus the sun's heat on a heat transfer fluid. The fluid could reach temperatures as high as 735 degrees Fahrenheit. To produce electricity, the hot fluid transfers its heat energy to water, creating steam. The steam is then used to run conventional steam turbines. Large thermos-like buildings containing molten salt will be located next to the steam boilers. At select times, instead of immediately creating steam, the heat transfer fluid will heat the molten salt. Then, if electricity is needed when the sun is not shining, the fluid can be heated by running it through the hot salt instead of through the mirrors. Using this process, electricity can be made from heat energy that was created up to six hours earlier. Permitting began in 2008 and has a tentative operation date in 2013	3 square miles 1,900 acres	SocioEc	Future	APS website
Sonoran Generating Station	South of Buckeye	Energy	300 MW photovoltaic solar power plant	4,000 acres	SocioEc, Air	Future	Wikipedia

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Star Solar Project	Tempe and other areas	Energy	STAR opened in 1985; other small solar facilities built between 1997 and 2006. The STAR Center is both a laboratory and power plant. Here Arizona Public Service works with manufacturers, universities and government labs in finding technological advancements in converting solar energy into electricity. The 33-acre park is one of the most advanced solar testing sites in the world. The many solar technologies at the site include single-axis tracking photovoltaic systems; high concentration photovoltaic solar systems and tilted tracker photovoltaic systems. In 2009, STAR became the outdoor testing location for TUV Rheinland PTL, the internationally recognized solar equipment testing and certification organization.	33 acres	SocioEc, Air Resources	Future	APS website
Sun Valley Substation	northwest of Sun Valley Parkway	Energy	Approved Extra High Voltage substation. Will have both 500kV and 230kV facilities. Scheduled to be in service by 2015.	99 acre site (57 acres to be developed for phase I)	All	Future	
Sun Valley to Trilby Wash to Palm Valley Double-circuit 230kV Line (APS)	Maricopa County	Energy	A 230kV transmission line is approved but not yet constructed and will travel east-west between the future Sun Valley Substation and the future Trilby Wash Substation, parallel to the existing east-west running 500kV transmission lines generally to the south of the study area. Previously known as West Valley North. Also, as Sun Valley to TS1 and Palm Valley to TS 2 to TS1.	ROW between 100-150 feet	All	Future	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Sundance Generating Station	Coolidge, southeast of Phoenix	Energy	The Sundance Generating Station in Coolidge, Arizona, is the newest member of the APS fleet. APS purchased the 450-megawatt station in the Spring of 2005. The simple-cycle, natural gas-fueled station consists of 10 quick-start combustion turbines.		SocioEc, Air Resources	Existing	APS website
Trilby Wash Substation	North of Deer Valley Road near 203rd Avenue	Energy	Approved High Voltage substation. Will have 230kV and 69kV facilities. Scheduled to be in service by 2015.	Approx. 20 acres		Future	
West Phoenix Power Plant	Located in southwest Phoenix	Energy	West Phoenix is a natural gas-fueled Power Plant has seven generating units - two combustion turbine units and five units that employ combined-cycle technology. Operated and owned by APS, West Phoenix generates about 1,000 megawatts of electricity.		SocioEc, Air Resources	Existing	APS website
Westwing Substation	North of Sun City West, near Hwy 303	Energy	Regional Extra High Voltage substation containing facilities at 500kV, 345kV, 230kV, 69kV and 12kV. This facility is operated by APS with participation from SRP, Western, and TEP.	Approx. 136 Acres developed	SocioEc, Air, Golden Eagle	Existing	
Castle Hot Springs Management Unit Travel Mgmt and Recreation Activity Plan / EA	North side of SR 74	Environmental Assessment	This plan would designate routes and guide recreation management on BLM administered lands north of SR 74.	N/A	All	Future	BLM, Phoenix District Office

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Grazing Term Permit Renewals	BLM and State lands	Grazing	Currently term permits are being issued and are anticipated to continue to be issued in accordance with Title 43 CFR 4130.2(a), "Grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans." These permit renewals are based on a determination of achievement of the Standards and Guidelines for grazing. Based on this determination changes may or may not be made to these permits.	39,802 acres of BLM land and 85,308 acres of State Trust land	All	Past, Present, Future	BLM
Alta Vista Estates	City of Surprise, Southeast of Westwing substation	Housing Development			SocioEc, Air	Past, Present, Future	
Broadstone Ranch	City of Surprise	Housing Development	See Village 6		SocioEc, Air	Future	
Cholla Hills	City of Peoria	Housing and Recreational Development	The planned development would contain two parcels. Parcel 1 would be developed with a commercial, resort, and residential concept or as an RV resort and commercial development. Parcel 2 would be developed as a traditional 240-room resort with ancillary residential and commercial uses.	454	2-mi Buffer SocioEc Air Visual	Future	Rezoning Report to the Planning and Zoning Commission, 2012

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Festival Ranch	Town of Buckeye	Housing Development	Sun City Festival is located on 3,300 acres in north Buckeye, about 45 miles northwest of Phoenix, Arizona. Sun City Festival is part of the Lyle Anderson Festival Ranch master-planned community, which sits on 10,000 acres. The Sun City Festival Marketplace, a shopping complex which includes a grocery store, is located at the entrance to Sun City Festival.	10,000 acres	All	Present, Future	
Grand Oasis Estates	City of Surprise	Housing Development	See Village 6		SocioEc, Air	Future	
Grand Vista	City of Surprise but near Wittmann	Housing Development	Planned community of 16,500 homes slated for the former DaimlerChrysler proving grounds in north Surprise; development expected to start by 2010. The open space plan includes about 756 ac.	5,500 acres	All	Future	
Lake Pleasant Heights	City of Peoria	Housing Development	The master planned community would contain a mixture of estate, low, medium, medium high, and mixed use residential land uses, including public recreation areas and open space.	3,268	All	Future	Specific Area Plan 2012
Patton Place Estates	West-southwest Wittmann; on north side of Patton Road, between Lone Mtn and Patton roads	Housing Development	Planned community in Wittmann, Arizona.		All	Past, Present	
Quintero Multiple	Hieroglyphic Mtns, 16752 West State Route 74, Peoria	Housing Development	Housing development and golf course. Vacation lodging with golf course and adjacent hiking, biking & walking trails nearby. This development is entitled for 283 dwelling units and covers 828 acres.	828 acres	All	Past, Present, Future	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Rancho Cabrillo	City of Surprise	Housing Development	Rancho Cabrillo is a typical residential development with densities in the 3-5 du/acre range. The Low Density Residential land use category is very appropriate for this area and will support the type of Development.		SocioEc, Air	Present, Future	
Rancho Maria	Wittmann	Housing Development	Planned community of 383 housing units.	129 acres	All	Future	
Saddleback Heights	City of Peoria	Planned Community	Master planned community in Peoria, Arizona. This enclave-style development will include commercial and mixed use, featuring two golf courses, a variety of neighborhood parks, offices and an extensive trail and bike system.	5,296 acres	All	Past, Present, Future	
Village 6	Maricopa County, Part of Surprise, Arizona	Housing Development	Village 6 is located in the western region of the Surprise planning area. All of Village 6 is currently located within unincorporated Maricopa County. With a population of 2,337 in an area of 43 sq. miles, this area maintains a rural lifestyle with equestrian properties. The community of Wittmann is located in Village 6. Several master planned communities are in various stages of development including Broadstone Ranch, Grand Oasis, Rancho Maria, Walden Ranch, Trail of Light, Peak View Estates, Asante West, and Patton Estates. Major streets include US-60, Patton Road, Jomax Road. Very little infrastructure exists in Village 6.		SocioEc, Air	Past, Present, Future	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Vistancia – Shea Homes (includes Trilogy and Blackstone developments)	South of Peoria	Housing Development	An all-encompassing community complete with schools, shopping, and recreation. In addition to the age-restricted Trilogy neighborhood, Vistancia is comprised of the family-friendly Vistancia Village and exclusive Blackstone Country Club. Situated north of the 303 transit corridor, residents find the perfect blend of new construction amenities and uncongested roadways combined with easy access to area attractions. Amenities include an aquatic park, golf set within tall native grasses, the Discovery Trail, top-rated schools plus great shopping, dining and entertainment. Trilogy at Vistancia in Peoria is an age-restricted active adult enclave in the award winning Vistancia master planned community. It caters to buyers with refined tastes for upscale active living in a luxurious resort-style setting.	7,100 acres	SocioEc, Air, Visual, Golden Eagle	Past, Present, Future	
White Peak Ranch Project	Northwest corner of Dysart Road and Dixileta Drive, Peoria	Housing Development	Proposed 189 unit detached single-family residential community that includes open spaces and natural open spaces within a context of a common design theme.	60 acres	SocioEc, Air	Future	Vistas at White Peak 2004
Arizona Proving Grounds	Wittman, Southeast of Luke AFB Auxiliary Field #1	Industrial	Vehicle testing grounds. Originally a Volvo facility created in 1985; in 2009 became a Ford facility and renamed. Offers complete services for testing vehicles to outside companies.	1,498 acres	Air, SocioEc	Past, Present, Future	Wikipedia
Chrysler Proving Grounds	City of Surprise	Industrial	Vehicle testing grounds with city traffic course, corrosion-preparation facility, and sun exposure test area for vehicles and components. This property has been sold to home builders/developers.	5,555 acres	All	Past	Wikipedia

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Misc. Rights-of-Way	Maricopa County	Lands	There are numerous rights of way located throughout the study area. Near the western portion of the study area, there are numerous rights of way granted for transmission lines and access roads. Reclamation has multiple rights of way for transmission lines and access roads for the CAP. There are also numerous roads, pipelines, and telecommunication lines in the study area. Near the northern portion of the study area, along SR 74, the Arizona State Highway Department, along with local municipalities, currently have many leases for roads and highways. There are also numerous pipeline, telecommunication, and transmission lines located within the study area which each have associated rights of way. The Quintero Golf and Country Club also lease easements for utilities servicing their facilities (BLM LR2000).			Past, Present, Future	Lands Tech Rpt
Luke Air Force Base	Maricopa County, T4N R3W	Military	Luke Air Force Base is the largest and only active-duty F-16 Fighting Falcon training base in the world with more than 200 F-16s assigned. The host command at Luke is the 56th Fighter Wing (56 FW), under Air Education and Training Command's 19th Air Force.		SocioEc, Air, Transporta-tion	Past, Present, Future	
Sand and Gravel Operations	Maricopa County	Mining	Stone, sand, and gravel mining operations generally occur along the Hassayampa River in the Sun Valley area and along the Agua Fria River.		SocioEc, Air	Past, Present, Future	Geology Tech Rpt
GEM #1	T6N R1W Section 30	Minerals	Active mining claim held by Eileen June Molnar. Serial Number AMC355774.		All	Present	BLM

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
GEM #2	T6N R1W Section 30	Minerals	Active mining claim held by Eileen June Molnar. Serial Number AMC355775.		All	Present	BLM
M.R.S. #1	T6N R1W Section 30	Minerals	Active mining claim held by George E. Molnar. Serial Number AMC355777.		All	Present	BLM
M.R.S. #2	T6N R1W Section 30	Minerals	Active mining claim held by George E. Molnar. Serial Number AMC355778.		All	Present	BLM
M.R.S. #3	T6N R1W Section 30	Minerals	Active mining claim held by George E. Molnar. Serial Number AMC355779.		All	Present	BLM
M.R.S. #4	T6N R1W Section 30	Minerals	Active mining claim held by George E. Molnar. Serial Number AMC355780.		All	Present	BLM
M.R.S. #6	T6N R1W Section 30	Minerals	Active mining claim held by George E. Molnar. Serial Number AMC355781.		All	Present	BLM
Misc. Mines	Maricopa County	Minerals	Approximately 20 existing mining sites are scattered throughout the study area with most being concentrated in the northwest portion of the study area. Saleable minerals are located in the southeastern portion of the study area and saleable and leasable minerals are located in the northwest portion of the study area.		All	Past, Present, Future	Lands Tech Rpt
White Rock No 1	T6N R1W Section 24	Minerals	Active mining claim held by Thomas Cummings. Serial Number AMC341552.		All	Present	BLM
White Rock No 2	T6N R1W Section 24	Minerals	Active mining claim held by Thomas Cummings. Serial Number AMC341553.		All	Present	BLM
White Rock No 21	T6N R1W Section 24	Minerals	Active mining claim held by Thomas Cummings. Serial Number AMC341555.		All	Present	BLM
White Rock No 22	T6N R1W Section 24	Minerals	Active mining claim held by Thomas Cummings. Serial Number AMC341556.		All	Present	BLM
White Rock No 23	T6N R1W Section 24	Minerals	Active mining claim held by Thomas Cummings. Serial Number AMC341557.		All	Present	BLM
White Rock No 3	T6N R1W Section 24	Minerals	Active mining claim held by Thomas Cummings. Serial Number AMC341554.		All	Present	BLM

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Adobe Dam Regional Park	At the base of the Hedgepeth Hills north of Phoenix	Recreation	The park is used for activities that require ample space. The land is used by many clubs, including: Arizona Model Pilots Society R/C Airport, Airfield Saguaro Central, Maricopa Live Steamers, Arizona Model Railroading Society, Phoenix Kart Racing Association Race Track, Arizona Karting Association Kart Racing Track, Fort Adobe Paintball Complex. The park includes a 500 Club Championship Golf Course, Victory Lane Sports Complex Ball Fields, and Wet 'n' Wild Phoenix water park.	1,526 acres	SocioEc, Air	Existing	Website http://www.maricopa.gov/parks/adobe/
Ben Avery Shooting Range	4044 W. Black Canyon Blvd. Phoenix. West of I 17 and north of Carefree Highway	Recreation	Public shooting range operated by Arizona Game and Fish Department. Includes a main range and specialty ranges, archery ranges, Olympic style archery range, a clay target center, and a 99-site campground.		SocioEc, Air	Existing	http://www.azgfd.gov/outdoor_recreation/basf_facilities.shtml
Black Canyon SRMA	located north of SR 74 and northeast of the study area	Recreation	The SRMA contains the Black Canyon Hiking and Equestrian RMZ (8,325 acres) and the Table Mesa RMZ (11,050 acres). The Black Canyon SRMA contains the Black Canyon National Trail which provides high quality non-motorized recreation opportunities for hikers, equestrians, and mountain bikers through the Black Canyon Corridor. The Table Mesa RMZ provides for intensive motorized recreation in semi-primitive to roaded-natural recreation settings.	68,730 acres	SocioEc, Air	Past, Present, Future	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Castle Hot Springs SRMA	north of SR 74 in the northeast portion of the study area	Recreation	This SRMA contains the Hieroglyphic Mountains Resource Management Zone (RMZ) (16,510 acres), Sheep Mountain RMZ (4,270 acres), and the Baldy Mountain RMZ (6,550 acres). The Castle Hot Springs SRMA is managed for motorized and non-motorized recreation and provides opportunities for developed camping, OHV use with single and two-track routes for general motorized recreation use and organized OHV events, horseback riding, bicycling, hiking, and picnicking.	112,430 acres	All	Past, Present, Future	
City of Peoria Parks		Recreation	Sonoran Mountain Ranch Park - 2 ramadas, 2 playgrounds, 2 basketball courts, and walking path. Terramar Park - 2 ramadas, playground, and walking path. Sunset Park 2 ramadas, 3 ball fields, 2 playgrounds, and walking path. WestWing Park - 3 ramadas, skate park, 2 tennis courts, 2 playgrounds, and multi-purpose turf area. Westland Park - 2 ramadas, 2 shaded playgrounds, 1 basketball court, and a multi-purpose turf area.	13 acres 10 acres 16 acres 5 acres	Recreation	Existing	Peoria General Plan 2010
Hassayampa SRMA	northwest of the study area	Recreation	This SRMA contains the Stanton (6,050 acres), Wickenburg Community (72,040 acres), San Domingo (16,040 acres), and Vulture Mine (30,100 acres) RMZs. Recreation opportunities within the SRMA include hiking, horseback riding, picnicking, camping, mountain biking, and OHV use.	181,910 acres	SocioEc, Air	Past, Present, Future	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Hells Canyon Wilderness Area	Maricopa and Yavapai Counties; 25 miles northwest of Phoenix	Recreation	Hells Canyon wilderness area consists of a scenic portion of the Hieroglyphic Mountain Range. Most of the wilderness is covered by Sonoran desert shrub vegetation saguaro, palo verde, barrel cactus, ocotillo, and desert grasses. Several mountains with cliffs offer climbing, and the canyons offer opportunities for hiking and sightseeing. Primitive camping spots are abundant, and plants, animals, and geology provide photographic and viewing opportunities.	9,900 acres	SocioEc, Air	Past, Present, Future	
Hieroglyphic Mountains Special Management Area	north of SR 74	Recreation	The purpose of the Hieroglyphic Mountains Special Management Area (SMA) is to protect the scenic, ecological, cultural, historic and recreational values of the area. The City of Peoria has designated this area as open space in their general plan. The intent of a SMA designation is to ensure that these lands remain in public ownership and to ensure collaborative planning and cooperative management for the area. Several mountains with cliffs offer climbing, and numerous hidden canyons offer opportunities for hiking and sightseeing. Camping spots are abundant, and plants, animals, and impressive geology provide photographic and viewing opportunities along popular trails in the area.	26,100	All	Past, Present, Future	http://www.sonoranheritage.org/proposed_designations/special_areas/hieroglyphic_mountains

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Hieroglyphic Mountains Special Management Area Continued	north of SR 74	Recreation	The Hieroglyphics Mountains Loop—a motorized trail with several access points managed by BLM—meanders through a classic Sonoran desert landscape, including stands of saguaro and cholla cactus and traverses the Arizona desert on existing routes. The loop takes trail users from the Boulders staging area, around the Hieroglyphic Mountains and returns to the staging area.				
Lake Pleasant HMA	located 25 miles northwest of Phoenix, partly within the City of Peoria and partly in unincorporated Maricopa and Yavapai counties	Recreation	BLM manages wild burros in the Lake Pleasant HMA at the minimum population of 30 needed to ensure the herd's free-roaming character, health, and self-sustaining ability.	81,000 acres	All	Past, Present, Future	BLM 2010
Lake Pleasant Regional Park	15 miles west of Interstate 17 on SR 74, 30 miles from Phoenix, and within the city limits of Peoria.	Recreation	This park has three designated boat launch areas which make the park extremely popular for boating, fishing, water skiing, jet skiing, sailing, and other water sports. The park contains a private marina and restaurant, visitor's center, nature center, amphitheater, 14-day use areas, and three designated pedestrian trails. The park offers 148 developed and semi-developed sites that are designated for recreational vehicle and tent camping. Additional recreation opportunities in the park include hiking, camping, wildlife viewing, photography, picnicking, and swimming.	23,662 acres	All	Past, Present, Future	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Maricopa County Regional Trail System	Maricopa County	Recreation	Maricopa County Regional Trail System links open space projects and trail systems into one big loop around the County. Many of the trail corridors identified in the plan are under the jurisdiction of Federal, State, and Local agencies other than Maricopa County. The County's goal is to work in partnership with agencies to facilitate the connectivity, funding, design, and construction of the trail network. The project will capitalize on existing ROWs such as canals, parks, utility corridors, and flood control projects.	The Maricopa County Regional Trail System is 1,521 miles total. The Maricopa Trail is 240 miles long.	All	Past, Present, Future	http://www.maricopa.gov/parks/MaricopaTrail/Faq.aspx
Surprise City Parks		Recreation	Marley Community Park - 2 softball fields, tot lot, amphitheater, water play area, and armadas. Surprise Community Park - 8 ball courts, lake, playgrounds, ramadas, dog park, stadium, tennis and racquet facility, skate park, and baseball facility. Surprise Farms Community Park - 4 ball fields, open green spaces, and walking path. Asante Community Park - 3 ball fields, 4 basketball goals, picnic area, and 2 playgrounds.	Marley Park 25 acres Surprise 195 acres Surprise Farms 57 acres Asante Park 50 acres	Recreation	Existing	Surprise Parks and Trails Master Plan 2008
The Boulders Staging Area	located in the study area north of SR 74	Recreation	This area is designated an OHV area on a mix of BLM, State Trust, and private land. The area contains numerous OHV trails that traverse the area between Lake Pleasant to the east, Wickenburg to the west, and Prescott National Forest to the north. All OHV travel is limited to existing trails, and a recreation permit is required to access State Trust lands. Amenities within the staging area facility include camping facilities, a rest room, and an information kiosk.	Part of Hieroglyphic Mtns SMA	All	Past, Present, Future	Arizona Game and Fish Department 2011

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Vulture Mountain ACEC	northwest of the study area	Recreation	The ACEC was designated to protect the cliffs along the Vulture and Caballeros Peaks which provide essential habitat and nesting habitat for many raptor species. The ACEC is managed to protect wildlife values and maintain biological diversity.	6,120 acres	Socio, Air	Past, Present, Future	
Vulture Mountain Regional Park	Mountain range west of Morristown	Recreation	Horseback riding, hiking, mountain biking, primitive tent and recreational vehicle camping, wildlife viewing, and hunting. Recreational and competitive OHV use.		Socio, Air	Past, Present, Future	
White Tank Mountain Regional Park	located north of the Town of Buckeye, east of the City of Surprise, and southwest of the study area	Recreation	Recreation activities in the park include cultural resource viewing, hiking, biking, horseback riding, picnicking, photography, and backcountry camping. The park offers approximately 25 miles of multi-use trails that range in length from 0.9 mile to 7.9 miles. In addition, the park offers an approximately 10-mile Competitive Track trail designed for challenging, high-speed outdoor recreation activities for individuals, groups, and organized events.	about 30,000 acres	Socio, Air	Past, Present, Future	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
State Route 74	From I-17 to US 60, SR 74 passes through Phoenix, Peoria and unincorporated Maricopa County north of Surprise, Maricopa County	Transportation	SR 74 is an east-west Arizona state route that connects I-17 to US 60 just north of Morristown. This State route is 31 miles long, and it serves Lake Pleasant Regional Park in northern Maricopa County. SR 74 also serves as a northern bypass to sections of US 60 in the Phoenix metropolitan area. SR 74 currently has two 12-foot travel lanes with two- to six-foot shoulders. SR 74 serves a critical role in providing access to and from the greater Phoenix area. SR 74 was given a "scenic overlay" in the 1997 Maricopa County Transportation System Plan. This reflects the county's strong interest in preserving the attractive Sonoran Desert landscape that SR 74 traverses for much of its length. Current efforts include ROW preservation for a potential future freeway facility. Funding for ROW acquisition has been identified in Phase V of the MAG RTP (FY 2026-2031). The ultimate concept for SR 74 is an asymmetrical 10-lane divided, controlled access, suburban freeway.	30.7 miles	All	Past, Present, Future	ADOT SR74 Study
Interstate 10	South of project area from Tonopah to Phoenix	Transportation	No projects in STIP (2011-2014) for Maricopa County.		Socio, Air, Transportation	Past, Present, Future	
Interstate 11 Hassayampa Freeway	Maricopa County, Wickenburg to Casa Grande	Transportation	A new interstate highway that was recently designated as part of a federal transportation bill. I-11 would interconnect Phoenix and Las Vegas, Nevada. It includes a 152-mile section connecting Casa Grande to Wickenburg, west and south of Phoenix.	Unknown	Socio, Air, Transportation	Future	MAG MAGA-Zine Aug-Oct 2012 Vol 17 No. 3

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Interstate 17	East of project area from New River to Phoenix	Transportation	I-17 is a Principal Arterial-Interstate. No projects in STIP (2011-2014) for Maricopa County.		Socio, Air, Transportation	Past, Present, Future	
State Route 303L (Estrella freeway)	Between US 60 and I-10, City of Peoria	Transportation	SR 303L is a local state route that creates the outer loop of the Phoenix metropolitan freeway system. SR 303 is located in the southeastern-most portion of the study area and bisects US 60 near Dear Valley Road. The SR 303L corridor will be continuously developed as a new freeway facility throughout the study area. It is proposed by the Arizona Department of Transportation as a high-capacity roadway and will eventually include three general purpose lanes and one High-Occupancy Vehicle (HOV) lane in each direction. New highway construction and capacity improvements in the study area are identified in Phases II, III, IV, and V of the MAG RTP (FY 2011 – 2020). It is currently in the design concept stage.		Socio, Air, Transportation, Visual	Past, Present, Future	City of Peoria 2005

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
US Route 60/Grand Avenue	NW of Morristown to SE of Sun City West	Transportation	Grand Avenue/US 60 is a US highway that connects the Atlantic Coast in Virginia to western Arizona. It serves the metropolitan Phoenix area as part of the local freeway system connecting Phoenix to Wickenburg crossing through west valley cities including Wittmann, Surprise, Peoria, Glendale, and West Phoenix. Additionally, US 60 serves as a freight corridor between Phoenix and Las Vegas, Nevada, by way of a regional connection with US 93 in Wickenburg. Planned projects along Grand Avenue/US 60 throughout the study area include widening efforts to expand the roadway in the vicinity of SR 303 from four general purpose lanes to six. These improvements are identified in Phase III of the MAG RTP (FY 2016 – 2020). No projects in STIP (2011-2014) for Maricopa County.		Socio, Air, Transportation, Visual	Past, Present, Future	MAG RTP (FY 2016 – 2020)
BNSF Railroad		Transportation	Burlington Northern Santa Fe (BNSF) rail line that intersects the study area is part of the 209-mile BNSF Phoenix Subdivision. There is one future BNSF facility planned in Surprise. The future Surprise Logistics Center will be located near Dove Valley Road and Grand Avenue and is expected to house a serving yard, a 200-acre auto center, and 350 acres of direct served uses, including manufacturing, warehousing, storage, and general industrial land uses.	22 miles within study area and 550 acres of industrial facility area	All	Past, Present, Future	
Castle Well Airport	north of SR 74 and east of Castle Hot Springs Road	Transportation	It is a private facility with one asphalt runway (2,600 feet by 60 feet) for use by residents of the community. 5 aircraft based on the field: 3 single engine aircraft, 1 ultralight, and 1 multi-engine plane.		Socio, Air, Transportation	Present	AirNav

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Luke AFB Auxiliary Field No. 1	15 miles NW of main base in the City of Surprise at intersection of Happy Valley Rd and 211th Ave	Transportation	This airfield is used by the Luke Air Force Base for flight training throughout the year. It supports approximately 13,000 practice operations per year. Concrete runways. Average of 274 airport operations per day; 100 percent military.	400 acres of federal land and 705 acres leased from the State	Socio, Air, Transportation	Present	AirNav
Pleasant Valley Airport	near the intersection 1 of SR 74 and Lake Pleasant Parkway	Transportation	A general aviation airport with three parallel runways and one cross wind runway. Pleasant Valley Airport is open to the public and serves single engine, light twin, helicopter, and glider aircraft. Aircraft based on the field: 33 Single engine airplanes: 14 Gliders airplanes: 14 Ultralights: 5 Aircraft operations: avg 205/day for a 12-month period ending 27 April 2011 80 percent local general aviation; 20 percent transient general aviation		Socio, Air, Transportation	Present	AirNav
Ranta Strip Airport	along Gates Road, west of the SR 74/US 60 intersection	Transportation	This airport is a private facility with one gravel runway measuring 2,400 feet by 100 feet.		Socio, Air, Transportation	Present	AirNav
Roesner Ranch Airpark	south of 237th Ave and SR 74intersection, along 8th St. alignment in Morristown	Transportation	It is a private facility with one 4,700 foot long (60 foot wide) gravel runway.	100 acres	Socio, Air, Transportation	Present	AirNav

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Thunder Ridge Airpark	237th Avenue and Joy Ranch Road in Morristown	Transportation	It is a private facility with an asphalt runway (2,600 feet by 40 feet) located within a residential airpark. The airpark has nine residential homes and hosts annual fly-in activities that regularly average 20 to 25 planes.		Socio, Air, Transportation	Present	AirNav
APS Dugas-Morgan Fiber Optic Project	I-17 Corridor between Cordes Lakes and SR-74	Utilities	Public scoping concluded September 6, 2011 DOI-BLM-AZ-P000-2011-003-EA		Socio, Air	Future	BLM NEPA log
Hassayampa/ AFNM Integrated Vegetation Treatment Project	I-17 Corridor between Cordes Lakes and SR-74	Vegetation	Hassayampa Field Office and Agua Fria National Monument. EA In Progress. Project started March 14, 2011. DOI-BLM-AZ-P000-2011-002-EA		Socio, Air	Future	BLM NEPA log
Phoenix District Integrated Weed Management Environmental Assessment	Phoenix District BLM lands	Vegetation	Project started 10/18/2010. Scoping Meetings Occurred December 14th and 15th, 2010. DOI-BLM-AZ-P000-2011-001-EA		All	Future	BLM NEPA log
Northwest Regional Landfill	19401 West Deer Valley Road Surprise, AZ 85387	Waste	Northwest Regional Landfill offers the following non-hazardous waste disposal services: Asbestos-Non-Friable, Construction & Demolition Debris , Drum Management-Liquids, Drum Management-Solids, Industrial & Special Waste, Municipal Solid Waste, Tires, and yard waste. Landfill permits: AZ Solid Waste Facility: 07039500.02 State Facility Special Waste ID: 301963 EPA ID: AZR000031559 APP Permit No: P-100267 Title V Air Permit: V97-016	1,200 acres	Socio, Air	Existing	http://www.wmsolutions.com/facilities/results.asp?state=AZ

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
Beardsley Canal		Water	Operated by the Maricopa Water District, transports water from Agua Fria River to the west-central part of the study area. Water is diverted from Camp Dyer Dam into the Beardsley Canal which is MWD's main transportation system. The concrete-lined canal extends nearly 33 miles.	33 miles	All	Existing	hwww.gcairoinc.com/maricopa_water_district.php
Central Arizona Project (CAP)		Water	The CAP canal is a multi-purpose water resource development and management project that brings water from the Colorado River to central and southern Arizona. The cities of Phoenix and Glendale treat CAP water and distribute it through their municipal systems. CAP water also can be delivered to the area through Salt River Project canals and the Beardsley Canal. CAP water is stored in Lake Pleasant with water from the Agua Fria River. Generally, water is banked in Lake Pleasant during low demand periods such as the winter and released during high demand periods such as the summer. The CAP canal is a 336-mile system of aqueducts, tunnels, pumping plants, and pipelines and is operated and maintained by the Central Arizona Water Conservation District. In addition to the water supply, the project also provides power, flood control, outdoor recreation, and fish and wildlife habitat benefits. Approximately 15 miles of the CAP canal are located within 2 miles of the Proposed Action route, ACC-certificated corridor, and the action alternative routes.	15 miles of it near the study area (336 miles)	All	Existing	

Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities (Continued)

PROJECT, DEVELOPMENT, DISTURBANCE, OR ACTIVITY	LOCATION (COUNTY, T/R SECTION, ETC.)	PROJECT TYPE	BRIEF DESCRIPTION	ACREAGES OR OTHER QUANTITY	WITHIN CIA	STATUS	SOURCE
McMicken Dam	SW portion of Surprise, south of Grand Ave/US60	Water	A 10-mile long, 34-foot high earthen dam, is constructed at the eastern end of the Trilby Wash Basin. Discharge from the Trilby Wash Basin to the Agua Fria River occurs through the McMicken Dam Outlet Channel and McMicken Dam Outlet Wash. It was originally constructed to protect Luke Air Force Base and surrounding agricultural lands from flooding.		Socio, Air, Golden Eagle	Existing	
New Waddell Dam and Reservoir	South end of Lake Pleasant	Water	Construction of New Waddell Dam began in 1985. New Waddell Dam's primary purpose is to store Colorado River water for CAP use. The dam also stores Agua Fria River runoff and provides flood protection by controlling river flows. The dam is located one-half mile downstream of historic Waddell Dam, which was built by the Maricopa Water District (MWD). The dam's reservoir, Lake Pleasant, also stores water for MWD irrigation.	12,040 acres	All	Existing	http://www.usbr.gov/lc/phoenix/projects/waddelldamproj.html
Waddell Canal	Begins south side of Lake Pleasant	Water	The Waddell dam diverts lake water into this canal which transports the resource to Valley users and the Central Arizona Project (CAP). The Waddell Canal is managed by the BOR.	4.9 miles	All	Existing	www.usbr.gov/lc/phoenix/projects/waddelldamproj.html

Appendix 6A

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns)

Response ID No.	Name	Associated Campaign
32	Dafford Allen	Form Letter 12
34	Robert and Shirley Keaster	Form Letter 12
35	Bill and Diane Clifford	Form Letter 12
36	Maria Setticase	Form Letter 12
37	Elaine M. Swete	Form Letter 12
38	Howard and Claire Rosenthal	Form Letter 12
39	Robert E. Swete	Form Letter 12
40	Alan Castello	Form Letter 12
41	John Jefferson	Form Letter 12
42	Jim and Gina Sears	Form Letter 12
43	Suzi and Mickey Colb	Form Letter 12
44	Mike Pagliarulo	Form Letter 12
45	Howard and Merrilynne Brown	Form Letter 12
47	Dominic and Cynthia Bartolone	Form Letter 12
48	Diane and David Jacoby	Form Letter 12
50	Lynda Jefferson	Form Letter 12
51	C&S Brands	Form Letter 12
52	Neil and Donna Monroe	Form Letter 12
60	James R and Kathy J Coffin	Form Letter 12
65	Russell and Linda Brown	Form Letter 12
66	Jeffrey and Jacqueline Taubman	Form Letter 12
68	Mr. and Mrs. Tom Van Thiel	Form Letter 12
69	Herb and Sandy Cooley	Form Letter 12
70	Tom Hinkle Jane Hinkle	Form Letter 12
71	Kathleen and Mark Johnson	Form Letter 12
72	Glenn Turner	Form Letter 12
117	Sierra Club on behalf of Jeff Tanner	Form Letter 116
118	Sierra Club on behalf of Cady Berkel	Form Letter 116
119	Sierra Club on behalf of Lance Anderson	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
120	Sierra Club on behalf of Elizabeth Hunter	Form Letter 116
121	Sierra Club on behalf of Glen Martin	Form Letter 116
122	Sierra Club on behalf of Ron Kuykendall	Form Letter 116
123	Sierra Club on behalf of Ron Kuykendall	Form Letter 116
124	Sierra Club on behalf of Donna Walkuski	Form Letter 116
125	Sierra Club on behalf of Carolyn DeJonge	Form Letter 116
126	Sierra Club on behalf of Louise Schiller	Form Letter 116
127	Sierra Club on behalf of Kathy Hinson	Form Letter 116
128	Sierra Club on behalf of Michael Shores	Form Letter 116
129	Sierra Club on behalf of Ashley Schutt	Form Letter 116
130	Sierra Club on behalf of Winnie Taney	Form Letter 116
131	Sierra Club on behalf of James Derrig	Form Letter 116
132	Sierra Club on behalf of Suzann Fildes	Form Letter 116
133	Sierra Club on behalf of Karen Kravcov	Form Letter 116
134	Sierra Club on behalf of Art Felsinger	Form Letter 116
135	Sierra Club on behalf of Dr. Jeanne Saint-Armour	Form Letter 116
136	Sierra Club on behalf of Dr. Sally Rings	Form Letter 116
137	Sierra Club on behalf of Lynn Crandall	Form Letter 116
138	Sierra Club on behalf of Brad Jarvis	Form Letter 116
139	Sierra Club on behalf of James Moran	Form Letter 116
140	Sierra Club on behalf of Jamie Corliss	Form Letter 116
141	Sierra Club on behalf of Mark Grenard	Form Letter 116
142	Sierra Club on behalf of Leland Wilson	Form Letter 116
143	Sierra Club on behalf of Terry Tedesco	Form Letter 116
144	Sierra Club on behalf of Eleanor Navarro	Form Letter 116
145	Sierra Club on behalf of Tom Wenzel	Form Letter 116
146	Sierra Club on behalf of Johnathan Hampton	Form Letter 116
147	Sierra Club on behalf of Shawn McCrohan	Form Letter 116
148	Sierra Club on behalf of Susan Thompson	Form Letter 116
149	Sierra Club on behalf of Robin Reed	Form Letter 116
150	Sierra Club on behalf of David Fura	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
151	Sierra Club on behalf of Ruth Bescript	Form Letter 116
152	Sierra Club on behalf of Nicholas Homyak	Form Letter 116
153	Sierra Club on behalf of Dennis Phelan	Form Letter 116
154	Sierra Club on behalf of M. Weber	Form Letter 116
155	Sierra Club on behalf of Renny McGovern	Form Letter 116
156	Sierra Club on behalf of Beverly Janowitz-Price	Form Letter 116
157	Sierra Club on behalf of Peter Newton	Form Letter 116
158	Sierra Club on behalf of Rita Guidi	Form Letter 116
159	Sierra Club on behalf of William Collins	Form Letter 116
160	Sierra Club on behalf of Michael Cozzi	Form Letter 116
161	Sierra Club on behalf of Rita Smalling	Form Letter 116
162	Sierra Club on behalf of Amy Wimp	Form Letter 116
163	Sierra Club on behalf of Ronnie Wright	Form Letter 116
164	Sierra Club on behalf of Dr. Nathan Carlson	Form Letter 116
165	Sierra Club on behalf of James Fishgold	Form Letter 116
166	Sierra Club on behalf of Judith Clark	Form Letter 116
167	Sierra Club on behalf of Ross McKenzie	Form Letter 116
168	Sierra Club on behalf of Dr. Timothy Winter	Form Letter 116
169	Sierra Club on behalf of Dr. Claudia Salmoni	Form Letter 116
170	Sierra Club on behalf of John McMillan	Form Letter 116
171	Sierra Club on behalf of Christine Blunt	Form Letter 116
172	Sierra Club on behalf of J. Husson	Form Letter 116
173	Sierra Club on behalf of Randy Filipic	Form Letter 116
174	Sierra Club on behalf of Janie Thomas	Form Letter 116
175	Sierra Club on behalf of Gina Emerson	Form Letter 116
176	Sierra Club on behalf of Karen Bond	Form Letter 116
177	Sierra Club on behalf of Terri Spurr	Form Letter 116
178	Sierra Club on behalf of Loring Cannon	Form Letter 116
179	Sierra Club on behalf of Tina Stimmler	Form Letter 116
180	Sierra Club on behalf of Shane Cummings	Form Letter 116
181	Sierra Club on behalf of Erin Clendening	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
182	Sierra Club on behalf of Patricia Orlinski	Form Letter 116
183	Sierra Club on behalf of Jake Turner	Form Letter 116
184	Sierra Club on behalf of Trang Pham	Form Letter 116
185	Sierra Club on behalf of Eileen Hampton	Form Letter 116
186	Sierra Club on behalf of Laura Flores-Ceballos	Form Letter 116
187	Sierra Club on behalf of Thomas Slaback	Form Letter 116
188	Sierra Club on behalf of John Fanklin	Form Letter 116
189	Sierra Club on behalf of Linda Bescript	Form Letter 116
190	Sierra Club on behalf of Bettina Bickel	Form Letter 116
191	Sierra Club on behalf of Beverly Smith	Form Letter 116
192	Sierra Club on behalf of Dr. Elna Otter	Form Letter 116
193	Sierra Club on behalf of Susan Penner	Form Letter 116
194	Sierra Club on behalf of Ti Bader	Form Letter 116
195	Sierra Club on behalf of Barbara Cain	Form Letter 116
196	Sierra Club on behalf of Annie McMahon	Form Letter 116
197	Sierra Club on behalf of Nancy Santori	Form Letter 116
198	Sierra Club on behalf of Margaret Finnerty	Form Letter 116
215	Daryl Miller	Form Letter 212
217	Meryl Schafer	Form Letter 212
218	Caroline Markham	Form Letter 212
219	David Anderson	Form Letter 212
220	Sierra Club on behalf of Scott Gooden	Form Letter 116
221	Sierra Club on behalf of Linda Mooney	Form Letter 116
222	Sierra Club on behalf of Matt Johnson	Form Letter 116
223	Sierra Club on behalf of Scott Mittelsteadt	Form Letter 116
224	Sierra Club on behalf of Michael Cooper	Form Letter 116
225	Sierra Club on behalf of Angel Torres	Form Letter 116
227	John Smejkal	Form Letter 212
228	Warren & Sandra Wolff	Form Letter 212
229	David Sharp	Form Letter 212
230	Linda Pritchard	Form Letter 212

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
231	Darla Rhoden	Form Letter 212
232	Richard Ramsden	Form Letter 212
233	Roxanna Carlson	Form Letter 212
242	Christine Smith	Form Letter 212
243	Patricia Brown	Form Letter 212
247	Sierra Club on behalf of Christine Nagasawa	Form Letter 116
248	Sierra Club on behalf of Judith Hicks	Form Letter 116
249	Sierra Club on behalf of Miranda Hansen	Form Letter 116
250	Sierra Club on behalf of Jesse Baade	Form Letter 116
251	Sierra Club on behalf of Jill Smith	Form Letter 116
252	Sierra Club on behalf of Magali Lachot	Form Letter 116
253	Sierra Club on behalf of John and Kathy Henke	Form Letter 116
254	Sierra Club on behalf of Annmarie Sauer	Form Letter 116
255	Sierra Club on behalf of Divina Del-Sol	Form Letter 116
256	Sierra Club on behalf of Nancy Whiting	Form Letter 116
259	Sierra Club on behalf of Jean Goetinck	Form Letter 116
260	Sierra Club on behalf of Michael Fordham	Form Letter 116
261	Sierra Club on behalf of Roland Maldonado	Form Letter 116
262	Sierra Club on behalf of Stuart Thomas	Form Letter 116
263	Sierra Club on behalf of Margaret Holt	Form Letter 116
268	Sierra Club on behalf of Dennis Boyle	Form Letter 116
269	Sierra Club on behalf of Patricia Orlinski	Form Letter 116
270	Sierra Club on behalf of Donald Fausel	Form Letter 116
271	Bridget Bell	Form Letter 116
272	Sierra Club on behalf of Rachel Deierling	Form Letter 116
273	Sierra Club on behalf of Pat Flahart	Form Letter 116
274	Sierra Club on behalf of Michael Bluhm	Form Letter 116
275	Sierra Club on behalf of Elodie Winger	Form Letter 116
276	Sierra Club on behalf of James Derrig	Form Letter 116
277	Sierra Club on behalf of Renee Cecala	Form Letter 116
278	Sierra Club on behalf of Karen Kravcov Malcolm	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
279	Sierra Club on behalf of Eileen Daily	Form Letter 116
280	Sierra Club on behalf of Maureen O'Brien	Form Letter 116
281	Sierra Club on behalf of Myrna Uditsky	Form Letter 116
282	Sierra Club on behalf of Kevin Petty	Form Letter 116
283	Sierra Club on behalf of Nina Potts-Jeffries	Form Letter 116
284	Sierra Club on behalf of Daniel Nail	Form Letter 116
285	Sierra Club on behalf of Vance Jacobus	Form Letter 116
286	Sierra Club on behalf of Edeltraud Kapl-Bluhm	Form Letter 116
287	Sierra Club on behalf of Cheryl Mcgregor	Form Letter 116
268	Sierra Club on behalf of Dennis Boyle	Form Letter 116
289	Sierra Club on behalf Rosemarie Lopez	Form Letter 116
290	Sierra Club on behalf of Monika Kawski	Form Letter 116
291	Sierra Club on behalf of Sally Rings	Form Letter 116
292	Sierra Club on behalf of Robert and Reiko Reavis	Form Letter 116
293	Sierra Club on behalf of Irene Mchugh	Form Letter 116
294	Sierra Club on behalf of Frank Harris	Form Letter 116
295	Sierra Club on behalf of Saliane Anderssen	Form Letter 116
296	Sierra Club on behalf of Scott Mittelsteadt	Form Letter 116
297	Sierra Club on behalf of Connie Wittig	Form Letter 116
298	Sierra Club on behalf of Dorothy Schultz	Form Letter 116
299	Sierra Club on behalf of Charles Duncan	Form Letter 116
301	Sierra Club on behalf of Hansi Patience	Form Letter 116
302	Sierra Club on behalf of Eric and Cedra Spragett	Form Letter 116
303	Sierra Club on behalf of Sarah Cole	Form Letter 116
304	Sierra Club on behalf of Roy Grando	Form Letter 116
305	Sierra Club on behalf of Stewart Katz	Form Letter 116
306	Sierra Club on behalf of Simone Ossipov	Form Letter 116
307	Sierra Club on behalf of Jeanne Saint-Amour	Form Letter 116
308	Sierra Club on behalf of Mary Goldstein	Form Letter 116
309	Sierra Club on behalf of Tom Ferguson	Form Letter 116
312	Chester Marks	Form Letter 241

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
314	Sierra Club on behalf of Beveryn Swaim	Form Letter 116
315	Sierra Club on behalf of Danielle Pyevich	Form Letter 116
316	Sierra Club on behalf of Howard Lanus	Form Letter 116
317	Sierra Club on behalf of Marcia Kiefer	Form Letter 116
318	Sierra Club on behalf of Kim Hoang	Form Letter 116
319	Sierra Club on behalf of Emily Hogan	Form Letter 116
320	Sierra Club on behalf of Leonna Graf	Form Letter 116
321	Sierra Club on behalf of Jean Rodine	Form Letter 116
322	Sierra Club on behalf of Shaun Walker	Form Letter 116
323	Sierra Club on behalf of Ashley Schutt	Form Letter 116
324	Sierra Club on behalf of Donna Allen	Form Letter 116
334	Madelene Evans	Form Letter 212
337	Sierra Club on behalf of Pat Bell	Form Letter 116
338	Sierra Club on behalf of Diane Plowman	Form Letter 116
339	Sierra Club on behalf of Linda Floyd	Form Letter 116
340	Sierra Club on behalf of Sandie Kubie	Form Letter 116
341	Sierra Club on behalf of Bruce Grubbs	Form Letter 116
342	Sierra Club on behalf of Erin Clendening	Form Letter 116
343	Sierra Club on behalf of Candace Hughes	Form Letter 116
344	Sierra Club on behalf of Eron Lee	Form Letter 116
345	Sierra Club on behalf of Ron Kuykendall	Form Letter 116
346	Sierra Club on behalf of Robert Fernie	Form Letter 116
347	Sierra Club on behalf of Patricia Philbrick	Form Letter 116
348	Sierra Club on behalf of Robert Lowe	Form Letter 116
349	Sierra Club on behalf of Rachel Hungerford	Form Letter 116
350	Sierra Club on behalf of Jody Immell	Form Letter 116
351	Sierra Club on behalf of Brian Minnick	Form Letter 116
352	Sierra Club on behalf of Kyle Johnston	Form Letter 116
353	Sierra Club on behalf of Shuessler	Form Letter 116
354	Sierra Club on behalf of Ray Goodwin	Form Letter 116
355	Sierra Club on behalf of Charlotte Cushman	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
356	Sierra Club on behalf of Glen Martin	Form Letter 116
357	Sierra Club on behalf of Valentin Manzanedo	Form Letter 116
358	Sierra Club on behalf of Sandra Castagno	Form Letter 116
359	Sierra Club on behalf of Christine Johnson	Form Letter 116
360	Sierra Club on behalf of David Biddle	Form Letter 116
361	Sierra Club on behalf of Kathleen Francis	Form Letter 116
362	Sierra Club on behalf of Richard Causer	Form Letter 116
365	Sierra Club on behalf of Kaaren Zvonik	Form Letter 116
366	Sierra Club on behalf of Annette Brink	Form Letter 116
367	Sierra Club on behalf of Judy Freel	Form Letter 116
368	Sierra Club on behalf of Stephanie Delgado	Form Letter 116
369	Sierra Club on behalf of Jeff Heidt	Form Letter 116
370	Sierra Club on behalf of Terry Tedesco	Form Letter 116
371	Sierra Club on behalf of Doug Reithman	Form Letter 116
372	Sierra Club on behalf of Erica Johnsen	Form Letter 116
373	Sierra Club on behalf of Andrew Miller	Form Letter 116
374	Sierra Club on behalf of Darcie Aukeman	Form Letter 116
375	Sierra Club on behalf of Gary and Molly Beverly	Form Letter 116
376	Sierra Club on behalf of Lenore Kester	Form Letter 116
377	Sierra Club on behalf of Lori Buhlman	Form Letter 116
378	Sierra Club on behalf of Sandy Becker	Form Letter 116
379	Sierra Club on behalf of Sharon Maxson	Form Letter 116
380	Sierra Club on behalf of Brady Russell	Form Letter 116
381	Sierra Club on behalf of Rachel Gullett	Form Letter 116
382	Sierra Club on behalf of Winnie Taney	Form Letter 116
383	Sierra Club on behalf of Ann Lilje	Form Letter 116
384	Sierra Club on behalf of David Gluck	Form Letter 116
385	Sierra Club on behalf of Pamela Rupprecht	Form Letter 116
386	Todd Glunt	Form Letter 212
393	Sierra Club on behalf of Joan Eveland	Form Letter 116
394	Sierra Club on behalf of John and Juanita Enkoji	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
395	Sierra Club on behalf of Patricia Berry	Form Letter 116
397	Sierra Club on behalf of Dennis Sassarini	Form Letter 116
398	Sierra Club on behalf of Denise Romesburg	Form Letter 116
399	Sierra Club on behalf of Mansur Johnson	Form Letter 116
400	Sierra Club on behalf of Frank Wyse	Form Letter 116
401	Sierra Club on behalf of Mark and Tina Bradley	Form Letter 116
402	Sierra Club on behalf of Loretta Herger	Form Letter 116
403	Sierra Club on behalf of Sandy Draus	Form Letter 116
404	Sierra Club on behalf of Jayme Bellenger	Form Letter 116
405	Sierra Club on behalf of Luisa Cox	Form Letter 116
406	Sierra Club on behalf of Faith Frias	Form Letter 116
407	Sierra Club on behalf of Jerome Roth	Form Letter 116
408	Sierra Club on behalf of Molly Moore	Form Letter 116
409	Sierra Club on behalf of Tracy Cole	Form Letter 116
410	Sierra Club on behalf of Janet Chase	Form Letter 116
411	Sierra Club on behalf of Kara Kuchovich	Form Letter 116
412	Sierra Club on behalf of Lyle Ackman	Form Letter 116
413	Sierra Club on behalf of Johnathan Hampton	Form Letter 116
414	Sierra Club on behalf of Eleanor Navarro	Form Letter 116
415	Sierra Club on behalf of Joel Dworin	Form Letter 116
416	Sierra Club on behalf of Judy Petty	Form Letter 116
417	Sierra Club on behalf of Wendy Petkus	Form Letter 116
418	Sierra Club on behalf of Lois Zeidman	Form Letter 116
419	Sierra Club on behalf of Stephen Gladstein	Form Letter 116
420	Sierra Club on behalf of Mike Mullarkey	Form Letter 116
421	Sierra Club on behalf of Laurie Sudol	Form Letter 116
422	Sierra Club on behalf of Charles Lagergren	Form Letter 116
423	Sierra Club on behalf of Sandra Meir	Form Letter 116
428	Deborah Zaragoza-Diaz	Form Letter 241
429	Sierra Club on behalf of Mary Kennedy Ice	Form Letter 116
430	Sierra Club on behalf of Crystal Rector	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
431	Sierra Club on behalf of Elizabeth Enright	Form Letter 116
432	Sierra Club on behalf of Shirley Boswell	Form Letter 116
433	Sierra Club on behalf of Clem Condon	Form Letter 116
434	Sierra Club on behalf of Wm and Ellen Kurtz	Form Letter 116
435	Sierra Club on behalf of Phillip Schaffer	Form Letter 116
436	Sierra Club on behalf of Martha Ortiz	Form Letter 116
437	Sierra Club on behalf of Elaine Cummings	Form Letter 116
438	Sierra Club on behalf of Bonnie Poulos	Form Letter 116
439	Sierra Club on behalf of Ted and Ann Bird	Form Letter 116
440	Sierra Club on behalf of Glenn Clark	Form Letter 116
441	Sierra Club on behalf of Pamela Stuart	Form Letter 116
442	Sierra Club on behalf of Carolyn Lenz	Form Letter 116
443	Sierra Club on behalf of Laurel Hieb	Form Letter 116
444	Sierra Club on behalf of Steve Savitch	Form Letter 116
445	Sierra Club on behalf of Melinda Weisser	Form Letter 116
446	Sierra Club on behalf of Claudia Dicosola	Form Letter 116
447	Sierra Club on behalf of Lisa Ackart	Form Letter 116
448	Sierra Club on behalf of Mary Klein	Form Letter 116
449	Sierra Club on behalf of Ellan Jagger	Form Letter 116
450	Sierra Club on behalf of Mercy Drake	Form Letter 116
451	Sierra Club on behalf of Barbara Cain	Form Letter 116
452	Sierra Club on behalf of Valentina Khoury	Form Letter 116
453	Sierra Club on behalf of Michael Eckert	Form Letter 116
454	Sierra Club on behalf of Susan Miller	Form Letter 116
455	Sierra Club on behalf of Lynn Crandall	Form Letter 116
456	Sierra Club on behalf of Doreen Trevino	Form Letter 116
457	Sierra Club on behalf of Michael Cooper	Form Letter 116
458	Sierra Club on behalf of Sue Arnold	Form Letter 116
459	Sierra Club on behalf of Bobbie Vandegriff	Form Letter 116
460	Sierra Club on behalf of Scott Pinalto	Form Letter 116
461	Sierra Club on behalf of Deborah Vath	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
462	Sierra Club on behalf of Dennis Nolan	Form Letter 116
463	Sierra Club on behalf of Tom Darrah	Form Letter 116
464	Sierra Club on behalf of Brians Skow	Form Letter 116
465	Sierra Club on behalf of Eve Shapiro	Form Letter 116
466	Sierra Club on behalf of Linda Schermer	Form Letter 116
467	Sierra Club on behalf of Dea Brasgalla	Form Letter 116
468	Sierra Club on behalf of Katie Meyer	Form Letter 116
469	Sierra Club on behalf of L Mj	Form Letter 116
470	Sierra Club on behalf of James Notestine	Form Letter 116
472	Sierra Club on behalf of Nick Alzuro	Form Letter 116
473	Sierra Club on behalf of Jessica Gonzalez	Form Letter 116
474	Sierra Club on behalf of Lee Winslow	Form Letter 116
475	Sierra Club on behalf of Shelley Phipps	Form Letter 116
476	Sierra Club on behalf of Naurleen Canterman	Form Letter 116
477	Sierra Club on behalf of G. Rodney Thurman	Form Letter 116
478	Sierra Club on behalf of Brett Nelson	Form Letter 116
479	Sierra Club on behalf of Nan Cayton	Form Letter 116
480	Sierra Club on behalf of Ted Solis	Form Letter 116
481	Sierra Club on behalf of Roger O-Daniel	Form Letter 116
482	Sierra Club on behalf of Maggie Cathey	Form Letter 116
483	Sierra Club on behalf of Richard and Sara Leibold	Form Letter 116
490	Nancy McCoy	Form Letter 489
491	Cindy Parker	Form Letter 489
492	Carolyn Dejonge	Form Letter 489
498	Mary Minor	Form Letter 212
499	Alicyn Gitlin	Form Letter 489
501	Nanyeon Kim	Form Letter 241
505	Elise Kelsheimer	Form Letter 489
506	Jorge Gurrola	Form Letter 489
507	Jade Martinez	Form Letter 489
508	Miss Stephen Gaiser	Form Letter 489

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
509	Heidi Krouskup	Form Letter 489
512	Sierra Club on behalf of Constance Geunfeld	Form Letter 116
513	Sierra Club on behalf of Tatiana Camacho	Form Letter 116
514	Sierra Club on behalf of Suzann Fildes	Form Letter 116
515	Sierra Club on behalf of Mike Morgan	Form Letter 116
516	Sierra Club on behalf of Roland Romo	Form Letter 116
517	Sierra Club on behalf of Glen Wetzel	Form Letter 116
518	Sierra Club on behalf of Rick Weber	Form Letter 116
519	Sierra Club on behalf of Daniel Chauvin	Form Letter 116
520	Sierra Club on behalf of Cady Berkel	Form Letter 116
521	Sierra Club on behalf of Tom Wenzel	Form Letter 116
522	Sierra Club on behalf of Estelle Greener	Form Letter 116
523	Sierra Club on behalf of Steve Maclear	Form Letter 116
524	Sierra Club on behalf of Kenneth Bierman	Form Letter 116
525	Sierra Club on behalf of Robert Coste	Form Letter 116
526	Sierra Club on behalf of Dianne Douglas	Form Letter 116
527	Sierra Club on behalf of Trish Miller	Form Letter 116
528	Sierra Club on behalf of Sasha Gabriel	Form Letter 116
529	Sierra Club on behalf of Mike Schacht	Form Letter 116
530	Sierra Club on behalf of Nasrin Mazuji	Form Letter 116
532	Sierra Club on behalf of Pam Sutton	Form Letter 116
533	Sierra Club on behalf of Ronald Walters	Form Letter 116
534	Sierra Club on behalf of Allen Dohner	Form Letter 116
535	Sierra Club on behalf of Ron Walkder	Form Letter 116
536	Sierra Club on behalf of Lucy Tyler	Form Letter 116
537	Sierra Club on behalf of Tania Messina	Form Letter 116
538	Sierra Club on behalf of Dennis Crew	Form Letter 116
539	Sierra Club on behalf of Janice Pulliam	Form Letter 116
540	Sierra Club on behalf of Sheri Brennan	Form Letter 116
541	Sierra Club on behalf of Vince Sercel	Form Letter 116
542	Sierra Club on behalf of David and Claudia Nelson	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
543	Sierra Club on behalf of Jerry Samulcek	Form Letter 116
544	Sierra Club on behalf of Paul Xavier	Form Letter 116
545	Sierra Club on behalf of Nancee Wood	Form Letter 116
546	Sierra Club on behalf of Ursula Fuchs	Form Letter 116
547	Sierra Club on behalf of Parnell Maxwell	Form Letter 116
548	Sierra Club on behalf of Judson Wynne	Form Letter 116
549	Sierra Club on behalf of Elizabeth Philhower	Form Letter 116
550	Sierra Club on behalf of Zanda Sakhi	Form Letter 116
551	Sierra Club on behalf of Michele Von Kampen	Form Letter 116
552	Sierra Club on behalf of Janice Poehner	Form Letter 116
553	Sierra Club on behalf of Charlene Mendez	Form Letter 116
554	Sierra Club on behalf of Robert Mac Mish	Form Letter 116
555	Sierra Club on behalf of Joyce Carter	Form Letter 116
556	Sierra Club on behalf of Batiyah Lampl	Form Letter 116
557	Sierra Club on behalf of Brett Falcon	Form Letter 116
558	Sierra Club on behalf of Clay Johnson	Form Letter 116
559	Sierra Club on behalf of John and Jane Brunson	Form Letter 116
560	Sierra Club on behalf of Sandra Floresmagana	Form Letter 116
561	Sierra Club on behalf of Margaret Leavitt	Form Letter 116
562	Sierra Club on behalf of Eileen Hampton	Form Letter 116
563	Sierra Club on behalf of Peter Preston	Form Letter 116
564	Sierra Club on behalf of Janet Tillotson	Form Letter 116
565	Sierra Club on behalf of Dillon Lanning	Form Letter 116
567	Sierra Club on behalf of Judith Simons	Form Letter 116
568	Sierra Club on behalf of Sharon Barone	Form Letter 116
569	Sierra Club on behalf of Marissa Weber	Form Letter 116
570	Sierra Club on behalf of David Martin	Form Letter 116
571	Sierra Club on behalf of Karen Brownlee	Form Letter 116
572	Sierra Club on behalf of Susan Jerez	Form Letter 116
573	Sierra Club on behalf of Beverly Janowitz-Price	Form Letter 116
574	Sierra Club on behalf of Jessica Locicero	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
575	Sierra Club on behalf of Margaret Finnerty	Form Letter 116
576	Sierra Club on behalf of Constance Geunfeld	Form Letter 116
577	Sierra Club on behalf of Raymond Hall	Form Letter 116
578	Sierra Club on behalf of M C Dornan	Form Letter 116
579	Sierra Club on behalf of Ann Mcdermott	Form Letter 116
580	Sierra Club on behalf of Brad Jarvis	Form Letter 116
581	Sierra Club on behalf of Roy Hess	Form Letter 116
582	Sierra Club on behalf of William Hilsmeier	Form Letter 116
583	Sierra Club on behalf of Sandra Theodoree	Form Letter 116
584	Sierra Club on behalf of Judy Besinger	Form Letter 116
585	Sierra Club on behalf of Bettina Bickel	Form Letter 116
586	Sierra Club on behalf of Lorna Falkenstein	Form Letter 116
587	Sierra Club on behalf of Brian Sowle	Form Letter 116
588	Sierra Club on behalf of Nick Evans	Form Letter 116
589	Sierra Club on behalf of Anne Reeves	Form Letter 116
590	Sierra Club on behalf of Bill Luke	Form Letter 116
591	Sierra Club on behalf of William Pettiner	Form Letter 116
592	Sierra Club on behalf of Renee Estrella	Form Letter 116
593	Sierra Club on behalf of Jim Danowski	Form Letter 116
594	Sierra Club on behalf of Shawn Moses	Form Letter 116
595	Sierra Club on behalf of Keith Erickson	Form Letter 116
596	Sierra Club on behalf of Varan Sreepathi	Form Letter 116
597	Sierra Club on behalf of Karen Moskiman	Form Letter 116
598	Sierra Club on behalf of Carol Tepper	Form Letter 116
599	Sierra Club on behalf of Marilyn Lange	Form Letter 116
600	Sierra Club on behalf of Gwen Buccigrossi	Form Letter 116
601	Sierra Club on behalf of Mireya Landin-Erdei	Form Letter 116
602	Sierra Club on behalf of Jesse Stanley	Form Letter 116
603	Sierra Club on behalf of Judith Pottle	Form Letter 116
604	Sierra Club on behalf of Marie Daly	Form Letter 116
605	Sierra Club on behalf of Elizabeth Boettcher	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
606	Sierra Club on behalf of Laura Kiholm	Form Letter 116
607	Sierra Club on behalf of Susan Ellen Hegemeyer	Form Letter 116
608	Sierra Club on behalf of Victor Phelps	Form Letter 116
609	Sierra Club on behalf of Karen Frank	Form Letter 116
610	Sierra Club on behalf of Carol Smith	Form Letter 116
611	Kate Ravenstein	Form Letter 489
612	Sierra Club on behalf of Leah Dimaria	Form Letter 116
613	Sierra Club on behalf of Ora Nez	Form Letter 116
614	Sierra Club on behalf of Voule Kapetanakis	Form Letter 116
615	Sierra Club on behalf of Fred Veltri	Form Letter 116
616	Sierra Club on behalf of Brad Jarvis	Form Letter 116
617	Sierra Club on behalf of Susan Thing	Form Letter 116
618	Sierra Club on behalf of Pat Kurtz	Form Letter 116
619	Sierra Club on behalf of Joni Bosh	Form Letter 116
620	Sierra Club on behalf of Martin Treon	Form Letter 116
621	Sierra Club on behalf of Crysten Johnson	Form Letter 116
622	Sierra Club on behalf of Elan Jagger	Form Letter 116
623	Sierra Club on behalf of Jennifer Schroeder	Form Letter 116
624	Sierra Club on behalf of Debbie Reichow	Form Letter 116
625	Sierra Club on behalf of Ian Critchley	Form Letter 116
626	Sierra Club on behalf of Gail Schuessler	Form Letter 116
627	Sierra Club on behalf of Joshua Mercado	Form Letter 116
628	Sierra Club on behalf of Gerard Syfu	Form Letter 116
629	Sierra Club on behalf of John Franklin	Form Letter 116
630	Sierra Club on behalf of Tony Wilso	Form Letter 116
631	Sierra Club on behalf of Rachael Holdeman	Form Letter 116
632	Sierra Club on behalf of Rich Flood	Form Letter 116
633	Sierra Club on behalf of Anne Jehle	Form Letter 116
634	Sierra Club on behalf of Diane Kent	Form Letter 116
635	Sierra Club on behalf of Marsha Foutz	Form Letter 116
636	Sierra Club on behalf of Paul Jehle	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
637	Sierra Club on behalf of Molly Osborne	Form Letter 116
638	Sierra Club on behalf of Kristine Flores	Form Letter 116
639	Sierra Club on behalf of Eve Shapiro	Form Letter 116
640	Sierra Club on behalf of Christina Moodie	Form Letter 116
641	Sierra Club on behalf of Christine Lange	Form Letter 116
642	Sierra Club on behalf of Andrew Jacobsen	Form Letter 116
643	Sierra Club on behalf of Elaine Miller	Form Letter 116
644	Sierra Club on behalf of Adam Wittman	Form Letter 116
645	Sierra Club on behalf of Shawn Mccrohan	Form Letter 116
646	Sierra Club on behalf of Wanda Torrey	Form Letter 116
652	Susan and John Gusich	Form Letter 650
653	Jim and Tina Sears	Form Letter 650
665	Sabrina Forgan	Form Letter 650
667	Sierra Club on behalf of Jane Artemis	Form Letter 116
668	Sierra Club on behalf of Matt Mueller	Form Letter 116
669	Sierra Club on behalf of Michael Royer	Form Letter 116
670	Sierra Club on behalf of Calvin Demeritt	Form Letter 116
671	Sierra Club on behalf of Lila Flagler	Form Letter 116
672	Sierra Club on behalf of Omid Mahdavi	Form Letter 116
673	Sierra Club on behalf of Gene Troutner	Form Letter 116
674	Sierra Club on behalf of Barbara Smith	Form Letter 116
675	Sierra Club on behalf of Patricia Orlinski	Form Letter 116
676	Sierra Club on behalf of Linda Mooney	Form Letter 116
677	Sierra Club on behalf of John and Juanita Enkoji	Form Letter 116
678	Sierra Club on behalf of Omid Mahdavi	Form Letter 116
679	Sierra Club on behalf of Karen Nelson	Form Letter 116
680	Sierra Club on behalf of Linda Bahns	Form Letter 116
681	Sierra Club on behalf of Anne Bassett	Form Letter 116
682	Sierra Club on behalf of Denis Romesburg	Form Letter 116
683	Sierra Club on behalf of Beverly Smith	Form Letter 116
684	Sierra Club on behalf of Dennis Slaback	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
685	Sierra Club on behalf of Greg Johnson	Form Letter 116
686	Sierra Club on behalf of Brett Nelson	Form Letter 116
687	Sierra Club on behalf of Ann Rigby	Form Letter 116
688	Sierra Club on behalf of Teresa Wall	Form Letter 116
693	Sierra Club on behalf Garry Rogers	Form Letter 116
695	Sierra Club on behalf of Philippa Atterbury	Form Letter 116
696	Sierra Club on behalf of Diana Blose	Form Letter 116
697	Sierra Club on behalf of Omid Mahdavi	Form Letter 116
698	Sierra Club on behalf of Sheila Brushes	Form Letter 116
699	Sierra Club on behalf of Jeanine Greene	Form Letter 116
700	Sierra Club on behalf of June Roffler	Form Letter 116
701	Sierra Club on behalf of Cliff Collipriet	Form Letter 116
702	Sierra Club on behalf of William Collins	Form Letter 116
703	Sierra Club on behalf of Patrick OConnor	Form Letter 116
704	Sierra Club on behalf of Paul Teepen	Form Letter 116
705	Sierra Club on behalf of Larry Tollman	Form Letter 116
706	Sierra Club on behalf of Eileen Sherwood	Form Letter 116
707	Sierra Club on behalf of Kate Graham	Form Letter 116
708	Sierra Club on behalf of Richard and Ellen Deming	Form Letter 116
712	Sierra Club on behalf of Jan Lee Sproat	Form Letter 116
713	Sierra Club on behalf of Allan Anderson	Form Letter 116
714	Sierra Club on behalf of Jon Marini	Form Letter 116
715	Sierra Club on behalf of Michael Schumm	Form Letter 116
716	Sierra Club on behalf of Monique Leiler	Form Letter 116
717	Sierra Club on behalf of Donna Sommers	Form Letter 116
718	Sierra Club on behalf of Louis Savenelli	Form Letter 116
719	Sierra Club on behalf of Richard Arthur IV	Form Letter 116
720	Sierra Club on behalf of Dolly Beaver	Form Letter 116
721	Sierra Club on behalf of Susan Shaw	Form Letter 116
722	Sierra Club on behalf of Linda Meyer	Form Letter 116
723	Sierra Club on behalf of Dara Rider	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
724	Sierra Club on behalf of Len and Doris Coris	Form Letter 116
725	Sierra Club on behalf of Lawrence Haak	Form Letter 116
726	Sierra Club on behalf of Barbara Lloyd	Form Letter 116
727	Sierra Club on behalf of Ray Umashankar	Form Letter 116
728	Sierra Club on behalf of Michael Ghiglieri	Form Letter 116
729	Sierra Club on behalf of Barb Warren	Form Letter 116
730	Sierra Club on behalf of Kent Davies	Form Letter 116
731	Sierra Club on behalf of James Forrest	Form Letter 116
732	Sierra Club on behalf of Judy Needham	Form Letter 116
733	Sierra Club on behalf of David Yerkey	Form Letter 116
734	Sierra Club on behalf of Chris Fennel	Form Letter 116
735	Sierra Club on behalf of Catherine Berger	Form Letter 116
736	Sierra Club on behalf of James Moran	Form Letter 116
737	Sierra Club on behalf of Michael Hegemeyer	Form Letter 116
738	Sierra Club on behalf of Jim Lawrence	Form Letter 116
739	Sierra Club on behalf of Debra Allamong	Form Letter 116
740	Sierra Club on behalf of Sharol Garber	Form Letter 116
741	Sierra Club on behalf of Dave Hawkins	Form Letter 116
742	Sierra Club on behalf of Francis Schilling	Form Letter 116
743	Sierra Club on behalf Beth Wilson	Form Letter 116
744	Sierra Club on behalf of Jana Austin	Form Letter 116
745	Sierra Club on behalf of Allan Goodman	Form Letter 116
746	Sierra Club on behalf of Fred Leonard	Form Letter 116
747	Sierra Club on behalf of Andrea Estrella	Form Letter 116
748	Sierra Club on behalf of Chere Gruver	Form Letter 116
749	Sierra Club on behalf of PJ Howell	Form Letter 116
750	Carolyn Dejonge	Form letter 489
756	John and Linda Adkins	Form Letter 650
764	Edmund and Betty Nightingale	Form Letter 650

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
766	Jeff Dixon	Form Letter 650
780	Sierra Club on behalf of Elaine Powers	Form Letter 116
782	Randy and Janette Dodds	Form Letter 650
785	Sierra Club on behalf of Sue Rodriguez	Form Letter 116
786	Sierra Club on behalf of Nicole Grimes	Form Letter 116
787	Sierra Club on behalf of Lois Bernstein	Form Letter 116
788	Sierra Club on behalf of Shawn Walker	Form Letter 116
789	Sierra Club on behalf of Janice Miano	Form Letter 116
790	Sierra Club on behalf of Lisa Harris	Form Letter 116
791	Sierra Club on behalf of Rosemary Kist	Form Letter 116
792	Sierra Club on behalf of Janice Danell	Form Letter 116
793	Sierra Club on behalf of Laura Ramirez	Form Letter 116
794	Sierra Club on behalf of Barbara Roberts	Form Letter 116
795	Sierra Club on behalf of Wendy Russell	Form Letter 116
796	Sierra Club on behalf of Elizabeth Hunter	Form Letter 116
797	Sierra Club on behalf of Lisa Ackart	Form Letter 116
798	Sierra Club on behalf of Felicia French	Form Letter 116
799	Sierra Club on behalf of Justin and Li Schmidt	Form Letter 116
800	Sierra Club on behalf of Mike Schacht	Form Letter 116
801	Sierra Club on behalf of Janet Glover	Form Letter 116
802	Sierra Club on behalf of Jon Larsen	Form Letter 116
803	Sierra Club on behalf of Nancy Tierney	Form Letter 116
804	Sierra Club on behalf of Joyce Stoffers	Form Letter 116
805	Sierra Club on behalf of Barb Warren	Form Letter 116
806	Sierra Club on behalf of Marsha Talifarro	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
807	Sierra Club on behalf of Anita Valdez	Form Letter 116
808	Sierra Club on behalf of Michael Hayton	Form Letter 116
809	Sierra Club on behalf of Robert Roffler	Form Letter 116
810	Sierra Club on behalf of Nanette Weaver	Form Letter 116
811	Sierra Club on behalf of Doug Goosey	Form Letter 116
812	Sierra Club on behalf of Carroll Munz	Form Letter 116
813	Sierra Club on behalf of William Blanche	Form Letter 116
814	Sierra Club on behalf of Joanne Lusk	Form Letter 116
815	Sierra Club on behalf of Carrie Darling	Form Letter 116
816	Sierra Club on behalf of Annie McMahon	Form Letter 116
817	Sierra Club on behalf of Jim Chumbley	Form Letter 116
820	Dr. Michael Quinlan	Form Letter 489
825	Ms. Elizabeth Gorton	Form Letter 489
831	Phillip and Nancy Marshall	Form letter 650
836	Sierra Club on behalf of Gabe Wigtil	Form Letter 116
837	Sierra Club on behalf of James Henrikson	Form Letter 116
838	Sierra Club on behalf of Amy Rodenbach	Form Letter 116
839	Sierra Club on behalf of Louis Casillas	Form Letter 116
840	Sierra Club on behalf of Everett Morris	Form Letter 116
841	Sierra Club on behalf of Norma McCulloch	Form Letter 116
842	Sierra Club on behalf of Randy Filipic	Form Letter 116
843	Sierra Club on behalf of Patricia Gonzalez-Lamb	Form Letter 116
844	Sierra Club on behalf of Michael Prete	Form Letter 116
845	Sierra Club on behalf of David and Roberta Chorlton	Form Letter 116
846	Sierra Club on behalf of Bobbie Howard	Form Letter 116
847	Sierra Club on behalf of Donna Lee Steele	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
848	Sierra Club on behalf of Debbie Gould	Form Letter 116
849	Sierra Club on behalf of Penny Deluca	Form Letter 116
850	Sierra Club on behalf of Melvin Bautista	Form Letter 116
851	Sierra Club on behalf of Jean Marie Thrasher	Form Letter 116
852	Sierra Club on behalf of Sharon Hill	Form Letter 116
853	Sierra Club on behalf of Les Rees	Form Letter 116
854	Sierra Club on behalf of Kim Wisch Lohorn	Form Letter 116
872		Same as Letter 496 (Petition portion)
875	Sierra Club on behalf of Cindy Dicarlo	Form Letter 116
876	Sierra Club on behalf of Susan Rose	Form Letter 116
881	Michael Shores	Form Letter 489
890	Sierra Club on behalf of Jeanne Devine	Form Letter 116
891	Sierra Club on behalf of Martha Boltares	Form Letter 116
892	Sierra Club on behalf of Markie Dipple	Form Letter 116
893	Sierra Club on behalf of Judy Whitehouse	Form Letter 116
894	Sierra Club on behalf of Dana Johnston	Form Letter 116
895	Mary & Jack Wolter	Form Letter 489
896	Sierra Club on behalf of Murray Bolesta	Form Letter 116
897	Sierra Club on behalf of Eric Gebhard	Form Letter 116
898	Sierra Club on behalf of Chetan Kumar	Form Letter 116
899	Sierra Club on behalf of Kent Davies	Form Letter 116
900	Sierra Club on behalf of Amy Perry Lippman	Form Letter 116
901	Sierra Club on behalf of William Thornton	Form Letter 116
902	Sierra Club on behalf of Laurie Donaldson	Form Letter 116
903	Sierra Club on behalf of Christina Aragon	Form Letter 116
904	Sierra Club on behalf of Suzann Fildes	Form Letter 116
905	Sierra Club on behalf of Marvin McCollum	Form Letter 116
906	Sierra Club on behalf of Georgia Braithwaite	Form Letter 116
907	Sierra Club on behalf of Thomas Hulen	Form Letter 116
908	Sierra Club on behalf of Dan Millis	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
909	Sierra Club on behalf of Douglas Sanders	Form Letter 116
910	Sierra Club on behalf of Eric Vance	Form Letter 116
911	Sierra Club on behalf of Kathyrn Buttles	Form Letter 116
912	Sierra Club on behalf of Carolyn Crews	Form Letter 116
913	Sierra Club on behalf of Loring Cannon	Form Letter 116
914	Sierra Club on behalf of Darrel Kropuenske	Form Letter 116
916	Sierra Club on behalf of John Seamon	Form Letter 116
917	Sierra Club on behalf of Cynthia Peterson	Form Letter 116
918	Sierra Club on behalf of James Fishgold	Form Letter 116
919	Sierra Club on behalf of Susan Penner	Form Letter 116
920	Sierra Club on behalf of David Black	Form Letter 116
921	Sierra Club on behalf of Dennis Sassarini	Form Letter 116
922	Sierra Club on behalf of Edward Estrella	Form Letter 116
923	Sierra Club on behalf of Jenny Roberts	Form Letter 116
924	Sierra Club on behalf of Craig Warren	Form Letter 116
925	Sierra Club on behalf of Drena LaPointe-Meyer	Form Letter 116
926	Sierra Club on behalf of Christine Compton	Form Letter 116
927	Sierra Club on behalf of Meg Dugan	Form Letter 116
928	Sierra Club on behalf of Karina Ramirez	Form Letter 116
930	Sierra Club on behalf of Tim Wernette	Form Letter 116
931	Sierra Club on behalf of Jessica Johnston	Form Letter 116
932	Sierra Club on behalf of Virginia Dotson	Form Letter 116
933	Sierra Club on behalf of Carl Kanun	Form Letter 116
934	Sierra Club on behalf of Jeff Tanner	Form Letter 116
935	Sierra Club on behalf of Sherry Young	Form Letter 116
936	Sierra Club on behalf of Rita Guidi	Form Letter 116
937	Sierra Club on behalf of Alice Isackson	Form Letter 116
938	Sierra Club on behalf of Karen Christian	Form Letter 116
939	Sierra Club on behalf of Nancy Wall	Form Letter 116
940	Sierra Club on behalf of Matthew Larkin	Form Letter 116
941	Sierra Club on behalf of Winnie Taney	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
942	Sierra Club on behalf of Patrice Spindler	Form Letter 116
943	Sierra Club on behalf of Glen Sollers	Form Letter 116
944	Sierra Club on behalf of William Form	Form Letter 116
945	Sierra Club on behalf of Barbara Lloyd	Form Letter 116
946	Sierra Club on behalf of David Fura	Form Letter 116
947	Sierra Club on behalf of Gary Bettum	Form Letter 116
948	Sierra Club on behalf of Melinda Wessier-Lee	Form Letter 116
949	Sierra Club on behalf of Darlene Dyer	Form Letter 116
950	Sierra Club on behalf of Geoffrey Lawrence	Form Letter 116
956	James and Judith Carter	Form Letter 650
962	Constance Thermes	Form Letter 212
963	Yvette Myers	Form Letter 212
965	Sierra Club on behalf of Julie Robinson	Form Letter 116
966	Sierra Club on behalf of Felicia French	Form Letter 116
967	Sierra Club on behalf of Scott Mittelsteadt	Form Letter 116
968	Sierra Club on behalf of Nancy Santori	Form Letter 116
969	Sierra Club on behalf of Dennis Starkins	Form Letter 116
970	Sierra Club on behalf of Michael Steager	Form Letter 116
971	Sierra Club on behalf of Philip Boddy	Form Letter 116
972	Sierra Club on behalf of Jack Hogan	Form Letter 116
973	Sierra Club on behalf of Alan Beck	Form Letter 116
974	Sierra Club on behalf of Kathryn Parke	Form Letter 116
975	Sierra Club on behalf of Janis Weisbrot	Form Letter 116
976	Sierra Club on behalf of Andrea Alagammai	Form Letter 116
977	Sierra Club on behalf of Jelica Roland	Form Letter 116
978	Sierra Club on behalf of Caitlin Troccoli	Form Letter 116
979	Sierra Club on behalf of Dona Laschiava	Form Letter 116
980	Sierra Club on behalf of Paula Morgan	Form Letter 116
981	Sierra Club on behalf of Michele Mercer	Form Letter 116
982	Sierra Club on behalf of John Curotto	Form Letter 116
983	Sierra Club on behalf of Khristine Roche	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
984	Sierra Club on behalf of Jack Strasburg	Form Letter 116
986	Sierra Club on behalf of Nick Alzuro	Form Letter 116
987	Sierra Club on behalf of Joan Borowiak	Form Letter 116
988	Saundra South	Form Letter 212
989	Larry Coppi	Form Letter 212
990	Sierra Club on behalf of Dan Mcguire	Form Letter 116
991	Sierra Club on behalf of Jennifer Vigil	Form Letter 116
992	Sierra Club on behalf of Judith Manocchia	Form Letter 116
993	Sierra Club on behalf of Michael Maggied	Form Letter 116
994	Sierra Club on behalf of Juan Blas	Form Letter 116
995	Sierra Club on behalf of Lara Fletcher	Form Letter 116
998	Dr. Tyler Kokjohn	Form Letter 489
1001	Sierra Club on behalf of Stephen Jordan	Form Letter 116
1003	Sierra Club on behalf of Maggie Kohanek	Form Letter 116
1004	Sierra Club on behalf of Erika Hess	Form Letter 116
1005	Sierra Club on behalf of Thomas Montforte	Form Letter 116
1006	Sierra Club on behalf of Diane Kent	Form Letter 116
1007	Sierra Club on behalf of Donald Hensley	Form Letter 116
1009	Sierra Club on behalf of Jeanne Saint-Amour	Form Letter 116
1010	Sierra Club on behalf of Natasha Douglass	Form Letter 116
1011	Sierra Club on behalf of Bonnie Oliver	Form Letter 116
1012	Sierra Club on behalf of Douglas Downey	Form Letter 116
1013	Sierra Club on behalf of Richard Flood	Form Letter 116
1014	Sierra Club on behalf of Jim Danowski	Form Letter 116
1015	Sierra Club on behalf of Myrna Uditsky	Form Letter 116
1016	Sierra Club on behalf of Donna Allen	Form Letter 116
1017	Sierra Club on behalf of Bonnie O'Neil	Form Letter 116
1018	Sierra Club on behalf of Sara Gibson	Form Letter 116
1019	Sierra Club on behalf of Joanne Moses	Form Letter 116
1020	Sierra Club on behalf of Dona Laschiava	Form Letter 116
1021	Sierra Club on behalf of Matt Mueller	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
1022	Sierra Club on behalf of Sarah Fickling	Form Letter 116
1023	Sierra Club on behalf of Stephen Gladstein	Form Letter 116
1025	David & Barbara Kelly	Form Letter 489
1026	Sierra Club on behalf of Clifford Provost	Form Letter 116
1027	Richard Stallings	Form Letter 212
1028	Daryl Miller	Form Letter 212
1029	Nicki Neal	Form Letter 212
1031	Sierra Club on behalf of Robin Wilssens	Form Letter 116
1032	Sierra Club on behalf of David Ravenscraft	Form Letter 116
1033	Sierra Club on behalf of Michael Stablie	Form Letter 116
1034	Sierra Club on behalf of Kathy Hinson	Form Letter 116
1035	Sierra Club on behalf of Rich Bloom	Form Letter 116
1036	Sierra Club on behalf of Laura Khlom	Form Letter 116
1037	Sierra Club on behalf of Jeanine Miller	Form Letter 116
1038	Sierra Club on behalf of Jake Turner	Form Letter 116
1039	Sierra Club on behalf of John Seamon	Form Letter 116
1040	Sierra Club on behalf of Beth Wilson	Form Letter 116
1041	Sierra Club on behalf of Dennis Crew	Form Letter 116
1042	Sierra Club on behalf of Dorothy Yazzie	Form Letter 116
1043	Sierra Club on behalf of Lela Calhoun	Form Letter 116
1044	Sierra Club on behalf of Maria C.	Form Letter 116
1045	Sierra Club on behalf of Carol Klamerus	Form Letter 116
1046	Sierra Club on behalf of Tom Wenzel	Form Letter 116
1047	Sierra Club on behalf of Mara Davenport	Form Letter 116
1048	Sierra Club on behalf of Lois Jordan	Form Letter 116
1050	Joseph and Kamy Ingels	Form Letter 650
1052	Constance Thermes	Form Letter 212
1053	Sierra Club on behalf of Jessica Gonzalez	Form Letter 116
1054	Merl Schafer	Duplicate of Letter 114
1055	Sierra Club on behalf of Sue Rodriguez	Form Letter 116 (duplicate to #785)
1056	Sierra Club on behalf of Trish Miller	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
1057	Dave Webb	Form Letter 212
1058	Sierra Club on behalf of Ronald Sims	Form Letter 116
1059	Sierra Club on behalf of Kathyrn Hunt	Form Letter 116
1060	Sierra Club on behalf of Loisann Darby	Form Letter 116
1061	Sierra Club on behalf of Randy Chandler	Form Letter 116
1062	Sierra Club on behalf of Thomas Jackson	Form Letter 116
1063	Sierra Club on behalf of Fred Veltri	Form Letter 116
1064	Sierra Club on behalf of Edd Dickman	Form Letter 116
1065	Sierra Club on behalf of Paris Nattboy	Form Letter 116
1066	Sierra Club on behalf of Steve Lowen	Form Letter 116
1067	Sierra Club on behalf of Mark Diblack	Form Letter 116
1068	Sierra Club on behalf of Viki Rothe	Form Letter 116
1069	Sierra Club on behalf of Kyle Schmierer	Form Letter 116
1071	Sierra Club on behalf of Richard Barnard	Form Letter 116
1072	Sierra Club on behalf of Shell Lavendar	Form Letter 116
1073	Sierra Club on behalf of Jim Lawrence	Form Letter 116
1074	Sierra Club on behalf of Michael Strchia	Form Letter 116
1075	Sierra Club on behalf of Sha Alber	Form Letter 116
1076	Sierra Club on behalf of Kim Wisch Lohorn	Form Letter 116
1077	Sierra Club on behalf of Jerry Martin	Form Letter 116
1078	Sierra Club on behalf of Jennifer Carnie	Form Letter 116
1080	Sierra Club on behalf of William Thorton	Form Letter 116
1081	Sierra Club on behalf of Mary Anne Cholewa-Weidner	Form Letter 116
1082	Sierra Club on behalf of Art Felsinger	Form Letter 116
1083	Sierra Club on behalf of George Averkiou	Form Letter 116
1084	Sierra Club on behalf of Alicia Fields	Form Letter 116
1085	Sierra Club on behalf of Sarah Brown	Form Letter 116
1086	Sierra Club on behalf of John Carlisle	Form Letter 116
1087	Sierra Club on behalf of Bill Sievers	Form Letter 116
1088	Sierra Club on behalf of Eric Vance	Form Letter 116
1089	Sierra Club on behalf of Ronald Proctor	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
1090	Sierra Club on behalf of Debra Watt	Form Letter 116
1091	Sierra Club on behalf of Alan Christianson	Form Letter 116
1092	Sierra Club on behalf of Anthony Baxter	Form Letter 116
1093	Sierra Club on behalf of Donna Longsyo	Form Letter 116
1094	Sierra Club on behalf of Martha O'Connor	Form Letter 116
1095	Sierra Club on behalf of Jeannine Giacalone	Form Letter 116
1096	Sierra Club on behalf of Tera Lewis	Form Letter 116
1097	Sierra Club on behalf of Peggy Yeargain-Williams	Form Letter 116
1098	Sierra Club on behalf of Kim Mccloud	Form Letter 116
1099	Sierra Club on behalf of Judy Whitehouse	Form Letter 116
1100	Sierra Club on behalf of Allen Dohner	Form Letter 116
1101	Sierra Club on behalf of Michael Carr	Form Letter 116
1102	Sierra Club on behalf of Leroi Morgan	Form Letter 116
1103	Sierra Club on behalf of Andrew Jacobsen	Form Letter 116
1104	Sierra Club on behalf of Deborah Vath	Form Letter 116
1105	Sierra Club on behalf of Richard Morford	Form Letter 116
1106	Sierra Club on behalf of Larry Tollman	Form Letter 116
1107	Sierra Club on behalf of Suzanne Murdoch	Form Letter 116
1108	Sierra Club on behalf of Harvey Grady	Form Letter 116
1109	Sierra Club on behalf of Stephan Leimroth	Form Letter 116
1110	Sierra Club on behalf of Michael Eckert	Form Letter 116
1111	Sierra Club on behalf of Jan Lee Sproat	Form Letter 116
1112	Sierra Club on behalf of Bill Wildman	Form Letter 116
1113	Sierra Club on behalf of Nancy Ventura	Form Letter 116
1114	Sierra Club on behalf of Craig High	Form Letter 116
1116	Sierra Club on behalf of Jan Keepers	Form Letter 116
1117	Sierra Club on behalf of Paul Ganeles	Form Letter 116
1118	Sierra Club on behalf of Allyson Dunn	Form Letter 116
1119	Sierra Club on behalf of Annie McMahon	Form Letter 116
1120	Sierra Club on behalf of Connie Wittig	Form Letter 116
1121	Sierra Club on behalf of Charles Duncan	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
1122	Sierra Club on behalf of Carmen Nichols	Form Letter 116
1124	Sierra Club on behalf of Nanette Weaver	Form Letter 116
1125	Sierra Club on behalf of Linda Schermer	Form Letter 116
1126	Sierra Club on behalf of Sara Sturz	Form Letter 116
1127	Sierra Club on behalf of Dean Krupa	Form Letter 116
1128	Sierra Club on behalf of Stuart Thomas	Form Letter 116
1129	Sierra Club on behalf of Nasrin Basir	Form Letter 116
1130	Sierra Club on behalf of Anita Baldez	Form Letter 116
1131	Sierra Club on behalf of Annette Pederson	Form Letter 116
1132	Sierra Club on behalf of Alannah Montoya	Form Letter 116
1133	Sierra Club on behalf of Mike Hughes	Form Letter 116
1134	Sierra Club on behalf of Norman Ross	Form Letter 116
1135	Sierra Club on behalf of Ingelore and James Fritsch	Form Letter 116
1136	Sierra Club on behalf of Nenah Sylver	Form Letter 116
1137	Sierra Club on behalf of Brian Skow	Form Letter 116
1138	Sierra Club on behalf of Robert MacNish	Form Letter 116
1139	Sierra Club on behalf of Wendy Petkus	Form Letter 116
1140	Sierra Club on behalf of Cynthia Paul	Form Letter 116
1141	Sierra Club on behalf of Georgia Braithwaite	Form Letter 116
1142	Sierra Club on behalf of Paul Jehle	Form Letter 116
1143	Sierra Club on behalf of Spenser Phillips	Form Letter 116
1144	Sierra Club on behalf of Joe Otto	Form Letter 116
1145	Sierra Club on behalf of David Liers	Form Letter 116
1146	Sierra Club on behalf of Damion Kirwan	Form Letter 116
1147	Sierra Club on behalf of Debbie Mcnally	Form Letter 116
1148	Sierra Club on behalf of Janet Chase	Form Letter 116
1149	Sierra Club on behalf of Voislav Oguyanov	Form Letter 116
1150	Sierra Club on behalf of Helen Marie Hill	Form Letter 116
1151	Sierra Club on behalf of Gene Polis	Form Letter 116
1152	Sierra Club on behalf of Denise Romesburg	Form Letter 116
1153	Sierra Club on behalf of L Mj	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
1154	Sierra Club on behalf of Steve Savich	Form Letter 116
1155	Sierra Club on behalf of Diane Shaw	Form Letter 116
1156	Sierra Club on behalf of Ann Mcdermott	Form Letter 116
1157	Sierra Club on behalf of Vicky Lockwood	Form Letter 116
1158	Sierra Club on behalf of Louis Casillas	Form Letter 116
1159	Sierra Club on behalf of Rosalinda Hernandez	Form Letter 116
1160	Sierra Club on behalf of Drena LaPointe-Meyer	Form Letter 116
1161	Sierra Club on behalf of Annabelle Herbert	Form Letter 116
1162	Sierra Club on behalf of Bridget Bell	Form Letter 116
1163	Sierra Club on behalf of Joanmarie Madden	Form Letter 116
1165	Sierra Club on behalf of Angelina Baily	Form Letter 116
1166	Sierra Club on behalf of Amy Marble	Form Letter 116
1167	Sierra Club on behalf of Dillon Landing	Form Letter 116
1169	Sierra Club on behalf of Susan Shaw	Form Letter 116
1170	Sierra Club on behalf of Emily Baxter	Form Letter 116
1171	Sierra Club on behalf of Michele Tucker	Form Letter 116
1172	Sierra Club on behalf of Ralph Prince	Form Letter 116
1173	Sierra Club on behalf of Monica Prieto	Form Letter 116
1174	Sierra Club on behalf of Saliane Anderssen	Form Letter 116
1175	Sierra Club on behalf of Jerome Roth	Form Letter 116
1176	Sierra Club on behalf of Anouk Ashby	Form Letter 116
1177	Sierra Club on behalf of Stephen Gaiser	Form Letter 116
1178	Sierra Club on behalf of Patricia Gallo	Form Letter 116
1179	Sierra Club on behalf of Eileen Hampton	Form Letter 116
1180	Sierra Club on behalf of Ann Vesowate	Form Letter 116
1181	Sierra Club on behalf of Tiffany Trennell	Form Letter 116
1182	Sierra Club on behalf of David Geonetta	Form Letter 116
1183	Sierra Club on behalf of Michele Von Kampen	Form Letter 116
1184	Sierra Club on behalf of Lois Zeidman	Form Letter 116
1185	Sierra Club on behalf of Molly Osborne	Form Letter 116
1186	Roger O'Daniel	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
1187	Sierra Club on behalf of TJ Georgitso	Form Letter 116
1188	Sierra Club on behalf of Brenda Tennyson	Form Letter 116
1189	Sierra Club on behalf of Scott Sobzcak	Form Letter 116
1194	Sierra Club on behalf of Jesse Stanley	Form Letter 116
1195	Sierra Club on behalf of Jennifer Schroeder	Form Letter 116
1196	Sierra Club on behalf of Sean Koudelka	Form Letter 116
1197	Sierra Club on behalf of Doris Turner	Form Letter 116
1198	Sierra Club on behalf of Brian Nordstrom	Form Letter 116
1199	Sierra Club on behalf of Honeygirl E	Form Letter 116
1200	Sierra Club on behalf of Wanda Torrey	Form Letter 116
1201	Sierra Club on behalf of Terry and Rosemary McDaniel	Form Letter 116
1202	Sierra Club on behalf of Theodore Turner	Form Letter 116
1203	Sierra Club on behalf of Jane Webb	Form Letter 116
1205	Sierra Club on behalf of Gail Schuessler	Form Letter 116
1206	Sierra Club on behalf of Robert Martin III	Form Letter 116
1207	Sierra Club on behalf of Pat Ross	Form Letter 116
1208	Sierra Club on behalf of Jean Marie Thrasher	Form Letter 116
1209	Sierra Club on behalf of Jennifer M. Hammond	Form Letter 116
1210	Sierra Club on behalf of David Blakeman	Form Letter 116
1211	Sierra Club on behalf of Marcia Kiefer	Form Letter 116
1212	Sierra Club on behalf of Frank Turkot	Form Letter 116
1213	Sierra Club on behalf of Trevor Ledbetter	Form Letter 116
1214	Sierra Club on behalf of Andrew Nemecek	Form Letter 116
1215	Sierra Club on behalf of Karen Kracov Malcolm	Form Letter 116
1216	Sierra Club on behalf of Peter Mckinney	Form Letter 116
1217	Sierra Club on behalf of Craig Fischella	Form Letter 116
1218	Sierra Club on behalf of Lizsabeth Rohovit	Form Letter 116
1219	Sierra Club on behalf of Tracey Till	Form Letter 116
1220	Sierra Club on behalf of Sandra Castagno	Form Letter 116
1221	Sierra Club on behalf of Kathleen Russell	Form Letter 116
1222	Sierra Club on behalf of Mike Schacht	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
1223	Sierra Club on behalf of Roselind Heinekamp	Form Letter 116
1224	Sierra Club on behalf of Richard Cady	Form Letter 116
1225	Sierra Club on behalf of Richard Causer	Form Letter 116
1226	Sierra Club on behalf of Michael Tibbets	Form Letter 116
1227	Sierra Club on behalf of Hugh Smith	Form Letter 116
1228	Sierra Club on behalf of David Fura	Form Letter 116
1230	Sierra Club on behalf of Glenn Clark	Form Letter 116
1231	Sierra Club on behalf of Mark and Tina Bradley	Form Letter 116
1232	Sierra Club on behalf of Erica Saldivar	Form Letter 116
1233	Sierra Club on behalf of Jeff Lyon	Form Letter 116
1234	Sierra Club on behalf of Susan Thing	Form Letter 116
1235	Sierra Club on behalf of Ann Wagner	Form Letter 116
1236	Sierra Club on behalf of Gerry McCullough	Form Letter 116
1237	Sierra Club on behalf of Anita Goss	Form Letter 116
1238	Sierra Club on behalf of Mary White	Form Letter 116
1239	Sierra Club on behalf of Mansur Johnson	Form Letter 116
1240	Sierra Club on behalf of Debra Bettis	Form Letter 116
1241	Sierra Club on behalf of Jan Clark	Form Letter 116
1242	Sierra Club on behalf of Peter Preston	Form Letter 116
1243	Sierra Club on behalf of Denise Donahue	Form Letter 116
1244	Sierra Club on behalf of Kate Ravenstein	Form Letter 116
1245	Sierra Club on behalf of Casey Heisler	Form Letter 116
1246	Sierra Club on behalf of Anthony Tripp	Form Letter 116
1247	Sierra Club on behalf of Alissa Hinckley	Form Letter 116
1248	Sierra Club on behalf of Kathy Schurdevin	Form Letter 116
1249	Sierra Club on behalf of Thomas Dow	Form Letter 116
1250	Sierra Club on behalf of Tiffany Goforth	Form Letter 116
1251	Sierra Club on behalf of Tiffany Fotos	Form Letter 116
1252	Sierra Club on behalf of Peggy Latozas	Form Letter 116
1253	Sierra Club on behalf of Robert Schile	Form Letter 116
1254	Sierra Club on behalf of Michael Popovich	Form Letter 116

List of Interested Parties that Signed Form Letters (i.e., Email Campaigns) (Continued)

Response ID No.	Name	Associated Campaign
1255	Sierra Club on behalf of Andrew Sherk	Form Letter 116
1256	Sierra Club on behalf of Magali Lachot	Form Letter 116
1257	Sierra Club on behalf of Jean Goetinck	Form Letter 116
1258	Sierra Club on behalf of Beveryn Swaim	Form Letter 116
1259	Sierra Club on behalf of Daniel Harper	Form Letter 116
1260	Sierra Club on behalf of Diane Lewis	Form Letter 116
1261	Sierra Club on behalf of Barb Warren	Form Letter 116
1262	Sierra Club on behalf of Susan Herbert	Form Letter 116
1263	Sierra Club on behalf of Brent Cox	Form Letter 116
1264	Sierra Club on behalf of Dawn Dyer	Form Letter 116
1265	Sierra Club on behalf of John Praytor	Form Letter 116
1266	Sierra Club on behalf of Jan Curtis	Form Letter 116
1267	Sierra Club on behalf of John Gardner	Form Letter 116
1268	Sierra Club on behalf of Charles Wagner	Form Letter 116
1269	Sierra Club on behalf of Melinda Weisser	Form Letter 116
1270	Sierra Club on behalf of Terry Tedesco-Kerrick	Form Letter 116
1271	Sierra Club on behalf of Elizabeth Sexton	Form Letter 116
1272	Sierra Club on behalf of Ross Mckenzie	Form Letter 116
1273	Sierra Club on behalf of Jeannie Devine	Form Letter 116
1274	Sierra Club on behalf of Mark Mahony	Form Letter 116
1275	Sierra Club on behalf of Winnie Taney	Form Letter 116